Annual Report 2004-2005

Chief Drinking Water Inspector

Ontario Ministry of the Environment
April 28, 2006

Protecting our environment.

Ontario

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Message from The Chief Drinking Water Inspector

I am pleased to present my first Annual Report as Chief Drinking Water Inspector, and to be able to state that Ontario's drinking water continues to be safe and of a very high quality. To be able to provide such an overarching message is dependent on having high quality and comprehensive information. It also requires assessing the safety net that has been put in place so that you can have confidence that the drinking water that arrives at your tap is safe and that appropriate actions are swiftly taken if there are reasons to believe it is not.

This report builds on information provided in my May 2005 progress report, updating and expanding on the 2004-05 water quality data to include information from municipal residential drinking water systems, non-municipal year round residential systems, and drinking water systems serving designated facilities which include schools, health care facilities and children's camps. In addition, information is provided on the Ministry's Laboratory Licencing and Inspection Program and Operator Certification and Training Program. This report also summarizes the most important province-wide compliance findings that were identified through the Ministry's municipal residential drinking water inspection program. I am working with the municipal sector and other stakeholders to identify how together we can achieve 100 percent compliance for all systems across the province.

I have provided a comprehensive description of the source to tap safety net that is currently in place and continues to be strengthened through the implementation of the 121 recommendations made by Commissioner O'Connor. The introduction of the *Clean Water Act* in December 2005 and the Drinking-Water Quality Management Standard which was posted on the *Environmental Bill of Rights Registry* for public comment in December 2005 will further enhance this safety net protecting Ontario's drinking water. I also believe investment in infrastructure, like source protection, is key in helping to prevent problems from happening in the future.

However, even the most robust drinking water delivery system requires ongoing vigilance on the part of all of those responsible. In March 2005, contamination of the water supply in the City of Stratford resulted in major disruptions to 30,000 residents. The actions of the city, health unit, provincial government and the media were well coordinated and ensured effective actions were taken swiftly to protect the public and restore safe drinking water to city residents as quickly as possible. I believe the situation was well managed because Ontario has a comprehensive safety net in place and all of the partners responsible for the delivery of safe water were well trained and clearly knew their roles and responsibilities.

I am committed to fostering continuous improvement and I look forward to our ongoing work with owners, operators and operating authorities of drinking water systems and other stakeholders to ensure the excellence of our drinking water. This report is the start of an annual reporting cycle that will provide Ontarians with access to understandable, current information about the safety of their water and will evolve in response to public information needs. I look forward to receiving feedback on this report and ideas for future reports.

Jim Smith

"The goal of any drinking water system should be to deliver water with a level of risk that is so negligible that a reasonable and informed person would feel safe drinking it."

Commissioner O'Connor,
Report of the Walkerton Inquiry
(Part Two; page 74)

Introduction

MOE inspector checking electronic displays

In the Report of the Walkerton Inquiry (Parts One and Two), Commissioner Dennis O'Connor established a fundamental measure against which to judge the performance of Ontario's drinking water systems:

To have confidence in the drinking water systems that serve them at home and at other facilities, Ontarians need information. Sharing information on water quality and the Ministry's inspection program for drinking water systems is necessary to help ensure that Ontarians are well informed about the drinking water safety net that has been established to protect their health. This annual report is one way that Ontarians can access key information related to drinking water quality and the inspection program for the province's drinking water systems and licensed drinking water testing laboratories.

Opposite: Strainers for turbidity and sediment removal

2004-05 Highlights

The Government of Ontario protects the health of its residents by putting in place safeguards that ensure tap water is safe to drink. A strong legislative and regulatory framework sets the rules that owners and operators of drinking water systems must follow.

The mandate of the Chief Drinking Water Inspector includes overseeing inspections of municipal residential drinking water systems, an important part of ensuring the provision of safe drinking water. It also includes ensuring that Ontario's drinking water systems use only licensed laboratories to test their drinking water samples.

Key results for 2004-05 include:

- 99.74 per cent of water quality tests submitted by municipal residential drinking water systems met Ontario drinking water standards
- 99.06 percent of water quality tests submitted by systems serving designated facilities met Ontario drinking water standards
- 99.41 percent of water quality tests submitted by non-municipal year round residential systems met Ontario drinking water standards
- 100 per cent of all licensed drinking water testing laboratories in Ontario were subject to at least one planned and one unannounced inspection

Part 1: The Drinking Water Safety Net

Ontario's framework for protecting drinking water has been strengthened through its commitment to implementing a source-to-tap safety net based on the recommendations of Commissioner O'Connor in the Report of the Walkerton Inquiry (Parts One and Two). There are eight components to Ontario's safety net, including establishing comprehensive rules in legislation and regulations, and providing the public with the information they want – and need – about their drinking water.

Part 2: 2004-05 Water Quality

This part of the Annual Report provides 2004-05 data on water quality provided by three categories of drinking water systems: municipal residential drinking water systems, systems serving designated facilities such as social and health care facilities, and non-municipal year-round residential systems.

Part 3: 2004-05 Ministry Inspection Program

An overview of the Ministry's inspection programs for municipal residential drinking water systems and licensed laboratories is provided.

Next Steps

The report concludes by speaking about important steps being taken to improve Ontario's drinking water protection framework.

Glossary

A glossary of terms appears at the end of the report.

Ontario's framework for protecting drinking water has been strengthened through its commitment to implementing a source to tap safety net.

Part 1: Ontario's Safety Net for Drinking Water

MOE Spills Action Centre, open 24/7

The government's commitment to ensuring that Ontarians have safe clean drinking water is founded on the approach to drinking water protection embodied in the recommendations of Commissioner Dennis O'Connor in the Report of the Walkerton Inquiry (Parts One and Two). As a result of actions taken since the report was issued, a strong safety net of drinking water protection has been put in place, one that Ontarians can rely on.

This section describes the eight components that make up Ontario's drinking water safety net.

> *"While it is not possible to utterly remove all risk from a water system, the recommendations' overall goal is to ensure that Ontario's drinking water systems deliver water with a level of risk so negligible that a reasonable and informed person would feel safe drinking the water."*
>
> *Commissioner O'Connor, Report of the Walkerton Inquiry (Part Two, page 5)*

Opposite: Belleville water tower

1. Comprehensive regulatory framework

In recommendation 67 of the Report of the Walkerton Inquiry (Part Two), O'Connor stated:

> *"The government should enact a* Safe Drinking Water Act *to deal with matters relating to the treatment and distribution of drinking water."*

O'Connor's rationale for this recommendation was that by gathering all drinking water legislation and regulations together, the effectiveness of drinking water protection in Ontario would be improved.

The *Safe Drinking Water Act, 2002*, (SDWA) helped to implement O'Connor's recommendations and set the foundation for Ontario's new drinking water protection framework.

TAPPING IN

The Safe Drinking Water Act, 2002 deals with a wide range of matters related to drinking water. It deals with municipal residential drinking water systems, regulated non-municipal drinking water systems and drinking water testing. It also provides for the establishment of regulations that set standards for drinking water quality, the treatment and distribution of drinking water, operator certification and training, and the licensing of drinking water testing laboratories.

The SDWA and its regulations impose obligations on owners and operating authorities of drinking water systems to operate in a manner that will ensure drinking water is safe and that drinking water systems are well-maintained.

The effective date of many provisions of the Act was June 1, 2003, though not all provisions of the framework have yet been brought into force. Regulations that contain detailed requirements include:

- **Drinking-Water Systems Regulation (O.Reg. 170/03):** This regulation sets out stringent requirements for treatment, testing, operational checks and corrective actions for the drinking water systems that bring drinking water to the homes of the majority of Ontario's residents.
- **Drinking-Water Testing Services Regulation (O.Reg. 248/03):** This regulation sets out the rules for licensed laboratories that perform drinking water tests in Ontario.
- **Ontario Drinking-Water Quality Standards (O.Reg. 169/03):** Standards for drinking water quality in Ontario are prescribed ("put into law") in O.Reg. 169/03.
- **Certification of Drinking-Water Systems Operators and Water Quality Analysts Regulation (O.Reg. 128/04):** This regulation strengthens the certification and training requirements for operators of drinking water systems in Ontario and analysts that perform water quality tests in licensed laboratories.
- **Drinking-Water Compliance and Enforcement Regulation (O.Reg. 242/05):** This regulation sets out legally binding

requirements for the Ministry in relation to compliance and enforcement of the SDWA and its regulations[1].

Since 2003, changes have been made to improve the efficiency and effectiveness of certain aspects of the new regulations, in particular, the Drinking-Water Systems Regulation (O.Reg. 170/03).

At first, O.Reg. 170/03 applied to all regulated drinking water systems – municipal and non-municipal (private), large and small, residential and non-residential, year-round residential and seasonal residential categories, which include systems serving designated facilities such as social and health care facilities. Some of its requirements relate to the:

- installation and operation of treatment equipment;
- sampling and testing of drinking water;
- notification of adverse test results and necessary corrective action; and
- certification of those who work on drinking water systems.

The government has announced its intention to take a new approach to regulating the non-residential and seasonal residential drinking water systems other than those serving year-round residential populations and designated facilities. This change responds to recommendations made by owners of these systems, representatives of other key stakeholder groups, and the Advisory Council on Drinking Water Quality and Testing Standards.

TAPPING IN

THE ADVISORY COUNCIL ON DRINKING WATER QUALITY AND TESTING STANDARDS

The Advisory Council on Drinking Water Quality and Testing Standards was established in May 2004, meeting six specific recommendations made in the Report of the Walkerton Inquiry. Its mandate is set out in provisions of the *Safe Drinking Water Act, 2002*. The Advisory Council makes recommendations on matters related to provincial drinking-water quality standards and testing.

At the request of the Minister of the Environment, the Advisory Council examined O.Reg. 170/03 to identify ways to make it more workable for smaller drinking water systems.

The Advisory Council submitted its report with recommendations to the Minister on March 22, 2005. The Advisory Council's recommendations have guided the Ministry in developing a new framework, in partnership with the Ministry of Health and Long-Term Care, for managing smaller drinking water systems starting with O.Reg. 252/05.

The full report is available on the Advisory Council's website at: *www.odwac.gov.on.ca*

The key change being proposed, which would require amendments to legislation, is that responsibility for systems serving non-residential and seasonal residential uses would be transferred to local boards of health operating under the *Health Protection and Promotion Act* (HPPA) of the Ministry of Health and Long-Term Care (MOHLTC). These systems serve places of worship, community halls, resorts, and bed and breakfasts, among other establishments.

1 It has been provincial policy to inspect all municipal residential drinking water systems at least once a year since 2000. O.Reg. 242/05 formalizes this policy by placing a legal requirement on the Ministry to inspect them at least once a year and to ensure that one out of every three inspections is unannounced. O.Reg 242/05 also requires licensed laboratories to be fully inspected at least twice a year and that one in every two inspections is unannounced. It formalizes how Ministry officials conduct inspections, ensuring that inspections are conducted on a regular schedule and are followed up using consistent standards. It also sets deadlines for specific tasks. For example, the Ministry must send a report within 45 days of completing all aspects of an inspection of a municipal residential drinking water system to the owner of the system and the local medical officer of health, among others. As well, within 45 days of completing an inspection of a licensed laboratory, the ministry must send a report to the laboratory. The Drinking Water Compliance and Enforcement Regulation (O.Reg. 242/05) also enables members of the general public to request an investigation of an alleged offence by a municipal residential drinking water system under the SDWA.

TAPPING IN

DEFINITION OF DESIGNATED FACILITY IN O.REG. 170/03

A designated facility may be served by any one of a wide range of drinking-water systems. Because the people who use the drinking water from these systems may be more vulnerable than others in the community (e.g., children, the elderly), the government regulates these systems under the stringent requirements of O.Reg. 170/03. Designated facilities include:

- children and youth care facilities
- children's camps
- health care facilities
- schools

It is proposed that public health inspectors would conduct site-specific, risk-based assessments of individual drinking water systems under the HPPA.

The first step toward implementing this framework was a new regulation that became effective June 3, 2005:

- **Regulation for Non-Residential and Non-Municipal Seasonal Residential Systems That Do Not Serve Designated Facilities** (O.Reg. 252/05): O.Reg. 252/05 imposes regulatory requirements for the drinking water systems proposed for transfer to a regulatory framework under the Ministry of Health and Long-Term Care.

This regulation ensures that regulatory requirements to protect public health are in place during the transition between the two ministries.

TAPPING IN

TRANSFER OF RESPONSIBILITY BETWEEN THE MINISTRY OF THE ENVIRONMENT AND THE MINISTRY OF HEALTH AND LONG-TERM CARE

The drinking water systems regulated by O.Reg. 252/05 which are being proposed for transfer to the Ministry of Health and Long-Term Care (provided they do not serve a designated facility) are:

- small municipal non-residential drinking water systems (e.g. town halls, municipal tourist information centres, museums or libraries)
- large municipal non-residential drinking water systems (e.g. large municipally-owned industrial parks and airports, large municipal community centres, sports and recreational facilities)
- small non-municipal non-residential drinking water systems (e.g. places of worship, bed and breakfasts, roadside garages and other commercial enterprises that provide public washrooms)
- large non-municipal non-residential drinking water systems (e.g. large hotels or resorts, large highway service stations, large commercial or industrial complexes)
- non-municipal seasonal residential drinking water systems (e.g. trailer parks / campgrounds, communal cottage systems)

The drinking water systems that will continue to be regulated under O.Reg. 170/03 by the Ministry of the Environment are:

- municipal residential drinking water systems (a municipally-owned system that serves a major residential development defined as six or more private residences on one or more properties)
- non-municipal year-round residential drinking water systems (e.g. privately owned systems serving a residential development such as trailer parks or private subdivisions with 6 or more sites or houses)
- any drinking water system serving a designated facility such as a children's camp, health or social care facility, or a school

Together, the Ministry of the Environment and the Ministry of Health and Long-Term Care are working to create a new legislative and regulatory framework for the transferred public drinking water systems. The goal, provided that proposed legislative amendments are passed by the legislature, is to have the new public health framework in place by January 2007. The Ministry of the Environment will continue to have responsibility for these systems until the new framework is operational and will continue to have responsibility for drinking water policy and standard-setting.

"Recommendation 1: Drinking water sources should be protected by developing watershed-based source protection plans. Source protection plans should be required for all watersheds in Ontario."

Commissioner O'Connor, Report of the Walkerton Inquiry (Part Two; page 92).

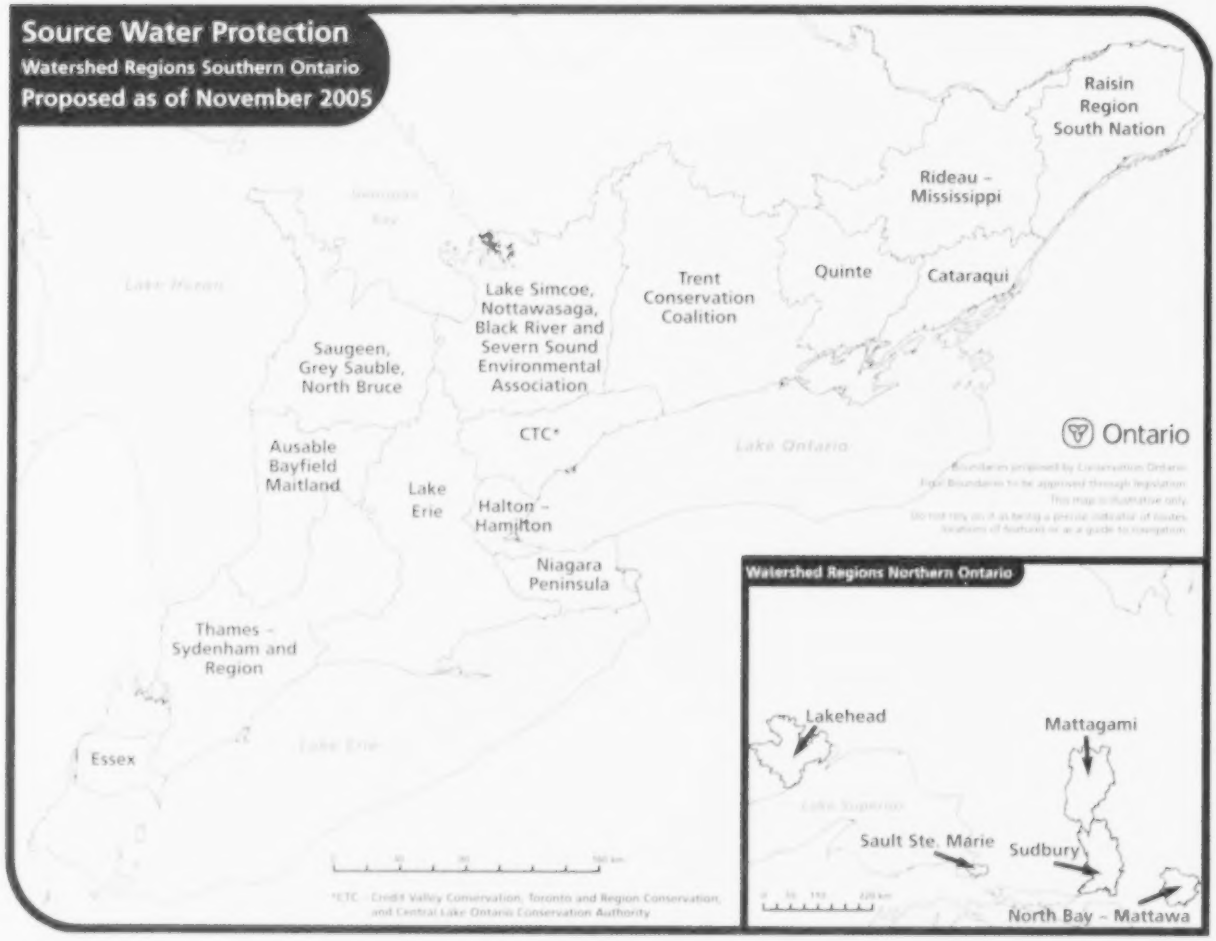
Source Protection

The Ministry introduced Bill 43, the *Clean Water Act, 2005*, on December 5, 2005. The proposed source protection framework is:

- **Watershed-based:** Source water protection will be based on natural watershed boundaries, as recommended by O'Connor, and take into account the valuable work municipalities and conservation authorities have already done on source protection.
- **Science-based:** Comprehensive scientific assessments identifying existing and future potential threats to municipal drinking water sources will guide source protection activities.
- **Locally driven:** Municipalities and local stakeholders, with the support of conservation authorities, will develop ways to address local challenges to their municipal drinking water sources.
- **Consultation-based:** The process of finding solutions to address risks to local drinking water sources will engage municipalities, conservation authorities, landowners, environmental groups, industry and small businesses, and the general public.
- **Accountable:** The provincial government will provide guidance on source water protection planning to watershed communities through conservation authorities so that the process is consistent, transparent and fair. Key decisions will be made locally, to reflect local circumstances and priorities.
- **Flexible:** The framework will recognize the unique circumstances throughout all of Ontario and involve municipalities in local decisions so that together, the provincial and municipal governments can make progress on source water protection.

As stated above, source protection planning will be based on natural watershed boundaries, to the extent possible. In areas with a conservation authority (CA), the CA will act as the Source Protection Authority (SPA). Two or more CAs will make up a source protection planning region and one CA will take an administrative lead for that region. CAs that are not partnered will lead the development of the plan for their watershed.

The lead CA will oversee and co-ordinate the planning process with a local, multi-stakeholder Source Water Protection Committee (SPC) for the region. Conservation authorities, along with municipalities, will provide the technical expertise during the planning process in the development of, for example, threat inventories and water budgets, and will also support the working groups and sub-committees of the SPC.



In areas where there is no CA, the provincial government will support other approaches to source protection planning. This could include allowing a municipality (or group of municipalities) to prepare plans that are consistent with provincial guidelines. Note that the proposed source protection framework is not intended to require source protection in unorganized areas. Consideration will be given to supporting clusters of communities in unorganized areas to follow an appropriate framework to enable their voluntary participation in source protection planning.

As proposed, there would be substantial opportunity for public participation in local source protection planning. This will help to ensure that the process is locally driven, an important part of finding successful solutions to address risks to municipal drinking water sources.

This map shows the proposed areas (CAs) and regions that would be required to follow the source protection planning process set out in the proposed legislation.

Timely, reliable testing 2.

Regular testing allows the water quality provided by regulated drinking water systems to be monitored and helps to ensure a timely response if the water does not meet the Ontario Drinking-Water Quality Standards (ODWQS).

O.Reg. 170/03 specifies the frequency of sampling and testing for each drinking water system category. The frequency of testing and parameters tested vary according to the category of the drinking water system, size of the population served, and source. The source of the drinking water is a key factor, reflecting the different risks to drinking water associated with surface water sources (such as lakes) and groundwater sources (such as underground aquifers). Testing is done by laboratories specially accredited and licensed to perform specific drinking water tests. (More detail is provided in **Part 3: 2004-05 Ministry Inspection Program**.)

Drinking water tests fall under five broad categories:

- **Microbiological:** Microbiological quality is important because of its association with waterborne diseases. Microbial contamination in drinking water could result in immediate health hazards. The seriousness of the potential health impacts is recognized in the standards established for some key microbiological parameters. For example, Ontario's standard for *E.coli* or fecal coliforms and total coliform is "non-detectable" in a sample volume of 100 millilitres.
- **Chemical:** Chemicals are potentially toxic. Some chemicals such as manganese may be naturally present in water and others may be present as a result of human activities (e.g. industrial processes). Some chemicals such as trihalomethanes may be present in drinking water when it comes from a drinking water system that uses chlorine for disinfection.
- **Radiological:** Some radionuclides occur naturally while others are products of human activities, such as mining and the production of nuclear energy.
- **Physical:** Physical characteristics, such as temperature and alkalinity of drinking water, may have an indirect impact on health-related matters. For example, temperature affects the rate of growth of microorganisms.
- **Aesthetic and other considerations:** Setting objectives for aesthetic quality helps ensure that drinking water is acceptable to those who drink it, thereby increasing people's confidence in their drinking water supply. Taste, colour, and odour of drinking water are the common aesthetic concerns.

Tests are carried out to determine if the levels of a contaminant exceed the regulated Ontario Drinking-Water Quality Standards.

Test results provide ongoing evidence of a system's ability to provide Ontarians with safe drinking water and protect their health. When a test shows that a standard has been exceeded, indicating a potential or actual health threat, an "adverse water quality incident" is deemed to have occurred. How the drinking water safety net protects human health when an adverse water quality incident has been detected is described in the next section.

3. Immediate notification and corrective action on adverse water quality incidents

An "adverse water quality incident" – usually referred to by its acronym, "AWQI" – is an umbrella term used by the Ministry of the Environment to refer to an incident in which a Ministry standard or objective has not been met, or to an incident that could lead to compromising the quality of drinking water at the tap. Indicators of adverse water quality are defined in the regulations. When they occur, they quickly trigger a follow-up response or corrective action to ensure that drinking water is safe.

A single adverse water quality incident does not necessarily mean that drinking water from a system is unsafe. Sometimes an AWQI is the result of an inadvertent contamination of a sample. Additional tests are typically ordered to confirm initial results. An AWQI is triggered if a test result exceeds a standard specified in Schedules 1, 2 or 3 of the Ontario Drinking-Water Quality Standards (O.Reg. 169/03) or an operational parameter in O.Reg 170/03. AWQIs may also result from any other observation that could reasonably be expected to result in unsafe drinking water being provided to consumers, such as the failure of disinfection equipment.

WHAT HAPPENS WHEN AN AWQI IS REPORTED – A CASE STUDY INVOLVING *E.COLI* AND AN AFTER-HOURS MINISTRY OF THE ENVIRONMENT RESPONSE TO A MUNICIPAL RESIDENTIAL DRINKING WATER SYSTEM

Step 1	Drinking water testing laboratory alerts the Spills Action Centre (SAC) and the local medical officer of health to the adverse water quality test results at 6:27 p.m. on October 26.
Step 2	Drinking water system operator reports the same adverse test results to the Spills Action Centre and the local medical officer of health at 6:41 p.m. on October 26. Operator makes plans to increase chlorination, flush the system and re-sample the water. The local medical officer of health may request to speak with Safe Drinking Water Branch staff to consult before issuing a Boil Water Advisory (BWA).
Step 3	The Spills Action Centre initiates a priority field response (i.e. site visit) as required by protocols established by the Safe Drinking Water Branch, since the AWQI involves a health-related threat, specifically, detection of *E.coli*.
Step 4	A MOE inspector is contacted and briefed by the Spills Action Centre at 6:56 p.m. on October 26. A Safe Drinking Water Branch Drinking Water Inspector arrives at the site, conducts an inspection, and obtains samples from the distribution system and water treatment plant by 10:21 p.m. The Drinking Water Inspector also ensures the operator has taken corrective actions, such as increasing the chlorine and re-sampling. Samples are dropped off at the local MOE office that night and delivered to a licensed laboratory on October 27.
Step 5	By 7:21 p.m. on October 26, the municipality involved starts to flush the system and alerts residents of the BWA via handbills and the media.
Step 6	A second set of re-samples are collected on October 27.
Step 7	On October 29, all the re-sample results come back clear. Based on this information, the local medical officer of health rescinds the Boil Water Advisory.
Step 8	Drinking Water Inspector recommends that the file be closed on October 29, as no further action is required.

Adding preservative to drinking water sample

To make sure that any risk to public health is quickly dealt with, licensed laboratories must verbally report an adverse drinking water test result to the system's owner, the local medical officer of health and the Ministry of the Environment's Spills Action Centre (SAC) immediately. Licensed laboratories are also required to provide written notice of the adverse drinking water test to all three parties within 24 hours.

The owner of the affected drinking water system must report the adverse water quality incident to the local medical officer of health and the Spills Action Centre. The Spills Action Centre is open 24 hours a day, seven days a week, and has the ability to dispatch a drinking water inspector to the drinking water system if needed.

The Ministry works with the local medical officer of health and the owner of the system to rectify the situation.

Ministry of the Environment drinking water inspectors follow up with the owner of the affected system to ensure that corrective action is properly taken and that the proper verbal (immediate) and written (within 24 hours) notifications to the Spills Action Centre and the local medical officer of health were provided.

The owner of the drinking water system must submit a notice of resolution to the Spills Action Centre and the local health unit within seven days of resolution of the incident. The notice summarizes the actions taken and results achieved. Ministry of the Environment inspectors may do a follow-up site inspection to verify that the appropriate corrective action was taken.

TAPPING IN

THE MINISTRY OF HEALTH AND LONG-TERM CARE'S BOIL WATER ADVISORIES (BWA) AND DRINKING WATER ADVISORIES (DWA)

The local medical officer of health is responsible for issuing Boil Water Advisories and Drinking Water Advisories under the *Health Protection and Promotion Act* (HPPA).

- *Boil Water Advisory (BWA):* A BWA is issued when there is reason to believe that a condition exists with a drinking water supply that may result in a health risk to those using it that can be corrected by boiling the water or by disinfection, for example, when bacteria such as *E.coli* enter the water supply. When a BWA has been issued, the local medical officer of health may order the owner of the system as to when and how to notify users to boil water or to use an alternate supply of drinking water.
- *Drinking Water Advisory (DWA):* A DWA is issued whenever there is reason to believe that a condition exists with a drinking water supply that may result in a health risk that cannot be corrected by boiling the water or by disinfection, such as when chemical contaminants enter the drinking water supply.

The local medical officer of health determines whether an advisory should be issued and, if so, what type of advisory to issue. Various methods of informing the public may be used, including door-to-door notification, posting notices of the advisory in public places, and through the media (e.g. the local newspaper, radio stations).

Once the local medical officer of health is satisfied that corrective actions have been taken and the situation is remedied, he/she will lift or rescind the advisory. There are situations where an advisory may be left in place for a longer period of time regardless of the microbiological quality of subsequent samples. For example, issues related to the structural and operational concerns of the drinking water system would likely be resolved only in the longer-term. So, if the situation that led to the adverse result has not been resolved, the advisory may be left in place as a precautionary measure.

CITY OF STRATFORD'S MARCH 2005 DRINKING WATER ADVISORY

On March 7, 2005, a Stratford resident contacted the municipality to report that their tap water contained a red foamy substance. Municipal staff notified the Ministry of the Environment's Spills Action Centre and the Perth District Health Unit. The Spills Action Centre notified the Ministry's London office of the Safe Drinking Water Branch and a priority field response was initiated by a Drinking Water Inspector. Ministry of the Environment staff also made contact with local municipal authorities and the local medical officer of health.

The residence was located across the street from a car wash. Further inspections suggested that the car wash had discharged a type of detergent-based material containing 2-Butoxyethanol into the drinking water distribution system. The spill appeared to have been caused by a cross connection and/or the failure of designed barriers to contamination including a backflow prevention valve (designed to stop water from re-entering the City's water supply). This allowed contaminated water to bypass the backflow value and enter the potable water supply. The car wash was subsequently disconnected from the city's water supply.

The local medical officer of health issued a drinking water advisory (DWA) to the residents of Stratford at noon. As the owner of the drinking water system involved, the City of Stratford took corrective action, including flushing and sampling for potential contaminants.

Throughout the day and those that followed, teleconferences were held with the Ministry's Inspection Staff and representatives of the Perth District Health Unit and municipal and provincial elected officials from the Stratford area. The ministry's scientists, toxicologists and laboratory staff also participated in these teleconferences and provided advice with regards to the chemical contaminant and its associated health risks through a review of Health and Safety Data Sheets and the interpretation of water test results.

The municipality ensured that Stratford residents were notified of the DWA through the media and by door-to-door notices. Residents were also told where they could obtain bottled water to use in the meantime.

The municipality continued to flush its drinking water system and submitted samples to a licensed laboratory. A team of Ministry of the Environment Drinking Water Inspectors took additional samples for analysis by the Ministry's own licensed laboratory. The local medical officer of health asked that microbiological samples be taken as well as chemical samples.

By the next morning, all chemical samples collected by the municipality and the Ministry of the Environment were found to indicate levels at which there was no health risk as advised by the ministry's toxicologists. As a result, the local medical officer of health changed the DWA to a boil water advisory (BWA), which remained in effect until the results of the microbiological test results were received.

There were door-to-door notifications of the change to a BWA. At the same time, residents were provided with instructions on flushing plumbing to remove existing water from household pipes.

The BWA was lifted at 9 p.m. on March 9, 2005, based on receipt by the local medical officer of health of two sets of microbiological sample results indicating that the water was free of contamination. By this time, the Ministry of the Environment had results from another set of chemical samples and was able to report that the samples showed no signs of contamination from 2-Butoxyethanol.

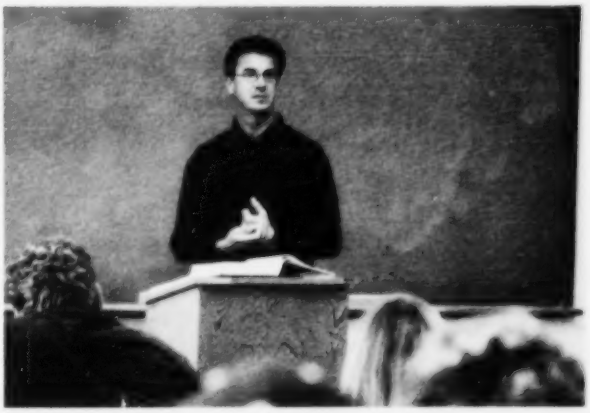
Written notice of the lifting of the BWA was delivered to Stratford residents on March 10, 2005.

Municipal operator flushing and checking flow of distribution main

Operator Training and Certification

Skilled and competent drinking water system operators are crucial to maintaining safe water quality.

> *"There is no question that competent water operators are an essential element of a safe drinking water system...Education, examination, and experience are essential components of ensuring competence."*
>
> *Commissioner O'Connor, Report of the Walkerton Inquiry (Part Two; page 378)*



In-class operator training

Ontario makes sure that drinking water systems have fully qualified and trained staff primarily through the Certification of Drinking-Water System Operators and Water Quality Analysts Regulation (O.Reg. 128/04).

The regulation applies to regulated drinking water systems that are required by O.Reg. 170/03 to have a "certified operator."[2] The Ministry of the Environment's operator certification program establishes professional standards related to education, training, experience, and examinations. Certification ensures that operators are aware of emerging technologies and knowledge related to their field, and sets minimum training hours and requirements for ongoing learning.

Some of the important new requirements of the regulation are:

- **New mandatory entry-level training:** All new drinking water operators must complete a rigorous entry-level training program, which will ensure consistent training across the province. The training was developed by the Ministry of the Environment in 2004-05. It is now available through the Walkerton Clean Water Centre.

TAPPING IN

WALKERTON CLEAN WATER CENTRE (WCWC)

The establishment of the Walkerton Clean Water Centre was announced in October 2004. It was created to help ensure training is available and accessible to operators in rural and remote communities, and to determine the long-term training needs of operators.

The WCWC will deliver the Ministry's Entry Level course for operators-in-training and the Preventing Water-borne Illnesses course that all operators must complete to be eligible to renew their certificate. As of January 2006, the WCWC is responsible for the delivery of the Ministry's correspondence course for small drinking water system operators in private systems.

More information on the WCWC is available on their website: *www.wcwc.ca*

2 Smaller, non-residential and seasonal residential systems that serve designated facilities are not subject to the certification requirements of O.Reg. 128/04. Instead of a certified operator, these systems must have a "trained person" operating the system. In 2004-05, 1,015 participants completed the Operator of Small Systems Course, which qualified them to be "trained persons".

- **New annual training standards:** Ontario's new training standards ensure that all water system operators continue to improve their knowledge and skills throughout their career. Operators may renew their certificates only if they take a specific number of training hours each year, averaged over the three-year period for which the certification is valid[3]. The hours of training required by an operator reflect the relative knowledge and skill needed to run a particular system, and range from 20 hours per year for small systems to 50 hours per year for more complex systems.
- **Grandparented operators must be re-certified:** "Grandparented" operators (those who received an operator's licence in the past without passing a certification exam) must be re-certified through examination. The deadline for re-certification is May 14, 2006. Grandparented operators who had overall responsibility for a drinking water system had until May 14, 2005, to be recertified through an examination.

  Since 2001, the number of grandparented drinking water operators has decreased by over 60% from 2,587 to 1,024 as of March 31, 2005.

Certificates are issued after a person successfully completes a written examination. Certification is sequential: a person starts with an operator-in-training (OIT) certificate, and then writes the certification exam for Class 1, then Class 2, Class 3, culminating in a Class 4 (most complex system) certificate.

As a result of O.Reg. 128/04, Ontario now has one of the most stringent requirements for operator certification and training in North America.

Municipal Residential Drinking Water System Licensing

The Ministry of the Environment is also strengthening the licensing requirements for municipal drinking water systems. In collaboration with stakeholders, the Ministry will replace the current Certificates of Approval with a more comprehensive and accountable Municipal Drinking Water Licence – one that will require the owners and operators of drinking water plants to incorporate quality standards in their management of water systems.

Numbers of Certificates for Certified Operators Issued (as of March 31, 2005)

	NUMBERS OF CERTIFICATES ISSUED (CUMULATIVE TO MARCH 31, 2005)					
System Type	OIT*	Class 1	Class 2	Class 3	Class 4	Total
Water Treatment: system collects, produces, treats and distributes drinking water	2,866	933	483	289	256	4,827
Water Distribution (includes Water Distribution and Supply): system distributes water only or distributes and treats water only by disinfection	3,192	985	941	287	183	5,588

* operator-in-training certificate

3 While most components of O.Reg. 128/04 became effective on August 1, 2004, some requirements such as the training requirements and the operator-in-training course of study came into effect on August 1, 2005.

5. Comprehensive inspection program

Ontario's drinking water inspection program ensures that the owners of municipal residential drinking water treatment and distribution systems comply with provincial laws and regulations, and deliver safe water to the public.

The inspection program sets out more than 130 regulatory requirements – in effect, a comprehensive series of checks and balances that, when met, safeguard drinking water to a high degree.

A drinking water inspector assessing a drinking water system checks the sources of the drinking water and evaluates the operation of the physical and treatment components. The drinking water inspector interviews staff, reviews documents, takes audit samples, and assesses management and operational plans. All non-compliance issues are recorded in a written inspection report.

MOE inspector documenting audit samples prior to transport

The drinking water inspector may also promote compliance by discussing best management and operational practices with drinking water system operators. This builds mutual confidence, and motivates operators to aim for the highest standards in the quality of drinking water they deliver to their communities.

TAPPING IN

TRAINING OF MINISTRY DRINKING WATER INSPECTORS

In the Report of the Walkerton Inquiry (Part Two), O'Connor recommended that drinking water inspectors "should be required to have the same or higher qualifications as the operators of the systems they inspect and should receive special training in inspections." (Recommendation 73)

In response, the Ministry developed a rigorous 10-week entry-level training program that prospective drinking water inspectors must complete before they may conduct system inspections. The training program offers comprehensive training on topics including safety, inspection procedures, protocols, and other technical training related to drinking water system technology. After completing the classroom component of the training program, inspectors are required to "job shadow" an experienced inspector in order to gain practical experience.

When a municipal residential drinking water system is found to be out of compliance with regulatory requirements, inspectors may use a range of progressively tougher actions – depending on the compliance history of the system, the significance of the non-compliance, the risk to public health and the environment, and the drinking water inspector's confidence in the system's capacity to prevent recurrences of the non-compliance. The range of actions includes:

MOE inspector checking back flow preventer and valve integrity

- **Promoting compliance:** compliance promotion is used for minor problems which do not affect the safety of the drinking water. The drinking water inspector may advise the drinking water system operator about how to rectify the unmet requirements, and obtain an assurance that the problem will be fixed and not allowed to recur. Compliance promotion activities are documented in the drinking water inspector's report.
- **Issuing a Provincial Officer Order (order):** an order formally spells out corrective action and other measures to be undertaken within prescribed timelines to rectify non-compliance.
- **Making a referral to the Investigations and Enforcement Branch (IEB):** instances of non-compliance with regulatory requirements may be referred to the IEB for further review and possible investigation. An investigation may result in a charge being laid, prosecution and conviction.
- **Issuing a notice of emergency response under the *Safe Drinking Water Act, 2002*:** this authority allows the Ministry to transfer control of a municipal residential drinking water system to another agency, in the event that the current owners and operators are unable to provide safe water.

More information is provided in **Part 3: 2004-05 Ministry Inspection Program.**

The Drinking-Water Compliance and Enforcement Regulation (O.Reg. 242/05) establishes conditions under which drinking water systems and licensed laboratories may undergo a "focused inspection", instead of a full inspection. This would apply to systems where no deficiencies have been found in three consecutive full inspections. A focused inspection covers a subset of the full inspection protocol, but includes the most important questions from a risk management perspective – factors that could affect the safety of the drinking water at the consumer's tap.

Focused inspections are a tool that the Ministry is using to prioritize its inspection activities based on risk to public health. The goal is to maximize the benefits to be gained from the inspection program by allowing resources to be directed where they are needed most – systems that need to make significant improvements in their operations. This approach also acknowledges and rewards good practice by reducing the inspection burden on systems known to be operating at the highest levels of performance.

DRINKING WATER SYSTEM PROFILES

Wanapitei Water Treatment Plant and Distribution System

The Water Treatment Plant and Distribution System is owned and operated by the City of Greater Sudbury. It serves the north-eastern and north-western urban areas of the City of Greater Sudbury, including Markstay, Coniston and parts of Garson, as well as supplying water to the Ellis Reservoir.

Built in 1974, the Water Treatment Plant was originally owned and operated by the Ministry of the Environment until the facility was transferred to Sudbury Region in the early 1980's.

The Distribution system represents about 60 per cent of the municipal distribution in the city. It shares a large in-ground reservoir with the David St. Distribution system, the other water treatment plant in Sudbury.

The drinking water source is the Wahnapitei River, situated just north of Highway 17 in the community of Wahnapitae. The water treatment plant pumps raw water through a concrete intake structure that extends approximately 18 metres into the river.

Because the drinking water source is a river, the raw water is highly vulnerable to the influence of storms, rain and winter run-off, which can cause fluctuations in raw water quality. Other influences include atmospheric deposition of metals from mining operations in the area.

Drinking water quality is maintained through advanced treatment equipment.

The Water Treatment Plant uses a water treatment process complete with coagulation/flocculation, chemically assisted filtration, and disinfection.

Cana Well System

The Cana Well System serves the Cana subdivision in Kingston Ontario. The system services a population of approximately 70 people and has 32 service connections. Established in the early 1950's by a co-operative of homeowners living in the subdivision, the system was operated privately by the co-operative, then by the Ministry of the Environment, until operation was assumed by Pittsburgh Township. When the township amalgamated with the City of Kingston in 1998, operation of the system was transferred to the care of Utilities Kingston.

The production well is located within the subdivision, about 800 metres from the Rideau Canal. The well has a depth of approximately 15 metres and is located in a confined sand aquifer below 4.5 to 6 metres of clay.

Drinking water quality is maintained through a water treatment process which consists of the injection of sodium hypochlorite solution and the maintenance of adequate contact time of chlorine and water, based on the rate of flow, before the water enters the distribution system. The treatment process is monitored using continuous monitoring equipment consisting of a flow meter, chlorine residual analyzer and turbidimeter.

As the water from the Cana well contains an elevated level of naturally occurring sodium, Utilities Kingston notifies both the residents and the local Medical Officer of Health when sodium test results are above 20 mg/L in accordance with regulatory requirements. The information is relevant to those who may be on a sodium restricted diet. The aesthetic objective for sodium is 200 mg/L.

The City of Kingston and Utilities Kingston are considering options for a new drinking water system to address the water quantity and quality needs for the next 20 years.

6. Investigation and enforcement of legislation and regulations

The Ministry of the Environment's Investigations and Enforcement Branch (IEB) is responsible for investigating offences under the *Safe Drinking Water Act*, 2002, among other environmental statutes.

> *"Strict enforcement is the primary principle in relation to enforcing statutes and regulations dealing with the safety of drinking water... This message is best reinforced by a strict enforcement policy, in which the failure to follow the requirements of the system will be prosecuted and will have serious adverse consequences for those responsible... The permanent instruction to the IEB should be: "strict enforcement, consistently applied."*
>
> *Commissioner O'Connor, Report of the Walkerton Inquiry (Part Two, pages 451-452).*

TAPPING IN

THE DIFFERENCE BETWEEN AN INSPECTION AND AN INVESTIGATION

Generally speaking, an inspection is a visit or enquiry undertaken for the purposes of determining whether or not a regulated entity such as a drinking water system is in compliance with applicable environmental rules and regulations. The hallmark of an inspection is that it is predominantly not about laying charges; rather, the Ministry of the Environment's drinking water inspector (if non-compliance is found) will issue orders, or take other steps to encourage or require the person / company to come into compliance.

An investigation gathers evidence for the purposes of determining whether or not charges are appropriate. The objective is to determine whether "reasonable and probable grounds" exist that an offence has occurred, whether there are any defences in law, and to lay charges if appropriate.

Investigations are conducted in order to gather evidence that may be used in a court of law to prosecute individuals or corporations suspected of non-compliance with Ontario's environmental laws.

In the case of drinking water, significant alleged violations are forwarded to IEB. IEB reviews the report and initiates an investigation if warranted.

Investigations involve interviewing witnesses, taking cautioned statements from individuals who may be charged, taking photographs, collecting evidence and reviewing any relevant scientific, technical and documentary evidence. In some cases, they may involve search warrants and obtaining the services of expert witnesses.

HYPOTHETICAL CASE STUDY OF AN INVESTIGATION

The Inspection

An unannounced inspection was conducted on a large municipal residential drinking water system owned and operated by Municipality X.

The inspection found that an adverse drinking water test result of combined chlorine residual less than 0.25 mg/L in a distribution sample was not reported to the Ministry of the Environment contrary to Section 18(1) of the *Safe Drinking Water Act*, 2002 (SDWA).

The inspection also found the following issues with operator certification:

- Drinking Water System Operator certificates were not being displayed in a conspicuous manner contrary to Section 15 of O.Reg. 128/04.
- On further scrutiny, it was noted that Employee Z's certificate had expired and that Employee Z was still working in the capacity of an Operator contrary to Section 12 of the SDWA.
- Municipality X was unaware of Employee Z's certificate status contrary to Section 22 of O.Reg. 128/04.

The matter was referred to the Investigations and Enforcement Branch (IEB) of the Ministry.

The Investigation

An initial assessment of the referral confirmed that an investigation was warranted. IEB assigned the referral for investigation.

The IEB investigator evaluated all documentary evidence, witness statements, due diligence factors, as well as other factors such as compliance history, before concluding that charges against Municipality X were warranted. The charges were screened by the prosecutor before being laid.

Municipality X was charged with two alleged offences under section 140(3) and one alleged offence under section 140(1) of the SDWA. Employee Z was also charged with one alleged offence under section 140(1) of the Act.

Legal Proceedings

Summonses were served upon both defendants. After a first appearance date, two adjournments and a pre-trial date, an agreed statement of facts was presented to the Court for a guilty plea on all counts. An agreed sentence was submitted which was accepted by the Court.

The defendants were convicted of their respective charges and fines were imposed.

When an investigator recommends charges, a Crown Brief is prepared which serves as the report to the crown prosecutor. The Crown has the prosecutorial discretion as to whether charges should proceed. The charges proceed if there is a reasonable prospect of conviction and they are in the public interest.

Municipal Residential Drinking Water System Convictions

In 2004-05, there were 14 municipal residential drinking water system prosecutions that resulted in convictions, with fines totalling $100,504[4]. A summary is provided of the drinking water system owners that were convicted between April 1, 2004, and March 31, 2005, for offences committed during or before this time period. See Appendix 1.

Licensed Drinking Water Testing Laboratory Convictions

In 2004-05, there were 3 drinking water testing laboratory prosecutions that resulted in convictions, with fines totalling $30,000. The three licensed laboratories failed to immediately report an adverse drinking water test result.

Details of this conviction data from April 1, 2004 to March 31, 2005 are provided in Appendix 1.

Note that conviction statistics reflect the year in which the conviction took place, not the year when the offence was committed.

4 Details of the 14 municipal residential drinking water system convictions may be found in the *Chief Drinking Water Inspector's Progress Report – Ontario's Municipal Drinking Water Systems: 2003 – 2004 Results & Interim Results for 2004-2005.*

7. Integrated data acquisition and information management

Municipal operator logging data

As part of the day-to-day management of drinking water systems, information is routinely collected and analyzed by the provincial government. The Ministry of the Environment is committed to having a comprehensive strategy that ensures that drinking water data can be made available, as appropriate, to a range of users, inside and outside the government.

The Ministry collects drinking water data in two main databases: the Drinking Water Information System (DWIS) and the Laboratory and Waterworks Inspection System (LWIS).

- **Drinking Water Information System (DWIS):** DWIS maintains profiles of drinking water system owners and operators, and each system's test results. Regulated drinking water systems register with the Ministry. Test results from drinking water samples are electronically submitted to the Ministry by the licensed laboratory that tested the sample. The Ministry of the Environment's drinking water inspectors use this data when conducting annual inspections of drinking water systems and licensed laboratories, and for compliance promotion and enforcement.
- **Laboratory and Waterworks Inspection System (LWIS):** LWIS captures the details related to inspections performed by the Ministry's drinking water and laboratory inspectors. LWIS was designed to easily adapt to program and regulatory changes that affect inspections.

These databases are the source of the data that is used later in this report to provide an assessment of the water quality delivered by municipal residential drinking water systems to Ontarians. (For full details, refer to **Part 2: 2004-05 Water Quality**.)

Information on Ontario's drinking water systems is of interest to more than just the system owners and the Ministry. An informed public is a very important part of a framework intended to provide safe drinking water on an ongoing – and continuously improving – basis.

8. Education and outreach

The Ministry is committed to making sure people have the information they want – and need – about drinking water.

> *"[B]ecause of the importance of the safety of drinking water to the public at large, the public should be granted external access to information and data about the operation and oversight of the drinking water system. In my view, as a general rule, all elements in the program to deliver safe drinking water should be transparent and open to public scrutiny… [T]he public should, with relative ease, be able to access enough information to satisfy a reasonable person about the safety of the drinking water."*
>
> *Commissioner O'Connor, Report of the Walkerton Inquiry (Part Two; page 469)*

Working with stakeholders and partners in providing safe drinking water is an integral part of daily work in the Ministry of the Environment.

The Ministry publishes many fact sheets that explain the rules that are in place to protect the quality of Ontario's drinking water. It produces guides for owners and operators of municipal and private drinking water systems. The Ministry of the Environment's drinking water inspectors are also provided with tools to educate the regulated community on changes to the legislative or regulatory framework. Other tools provided by the Ministry also include local seminars, and other promotional materials and media ads on the province's drinking water program. A priority in 2004-05 was to make sure members of the regulated community were aware of the regulatory changes that affected them, such as the transfer of certain systems to the Ministry of Health and Long Term Care under O.Reg. 252/05.

Providing education and outreach through conferences and seminars

The Chief Drinking Water Inspector is actively involved in the drinking water community and, together with other Ministry of the Environment staff, speaks at many conferences and meetings to a wide range of audiences. The Ministry of the Environment staff have worked with a number of partners to deliver seminars to local drinking water system operators on regulatory changes. The Ministry regularly sponsors and participates in conferences that highlight drinking water issues through setting up information booths and holding information sessions, among other activities.

The Ministry also provides e-mail updates about new information on drinking water that is added to its website. The website is regularly updated to ensure that the public and the drinking water community have one-step access to the most up-to-date information. Individuals can sign up for the updates by e-mailing: *drinking.water@ene.gov.on.ca*.

Ontarians can continue to have confidence in their drinking water.

Part 2: 2004-05 Water Quality

Conducting chlorine residual test using a portable analyzer

This section provides 2004-05 data on the quality of water provided by the systems that serve about 82 per cent of Ontarians in their homes. It also provides information on the quality of water provided by other systems that serve designated facilities providing social and health care to some of Ontario's most vulnerable residents, as well as that provided by non-municipal year-round residential systems. These systems are regulated under the Drinking-Water Systems Regulation (O.Reg. 170/03).

Overall, Ontario's drinking water is both safe and of a very high quality.

Opposite: Careful sample handling

1. Water Quality

O.Reg. 170/03 sets stringent requirements for drinking water systems that supply the homes of the majority of Ontario's residents. The requirements for sampling and testing vary by drinking water system category, the size of the population served by the system, and the source of the drinking water. All tests must be performed by licensed laboratories to ensure reliability and validity of the test results.

Water quality tests are the most direct way to demonstrate the safety of drinking water. Test results provide ongoing evidence of a system's ability to provide Ontarians with safe drinking water.

When an "adverse water quality incident" (AWQI) occurs because a drinking water quality standard has been exceeded, a follow-up response or corrective action is quickly put in place to ensure that drinking water is safe for consumers.

A single adverse water quality incident does not necessarily mean that drinking water from a system is unsafe. Sometimes an AWQI is the result of inadvertent contamination of a sample. Additional tests are required to confirm initial results.

Additional detail on the testing regime required by regulations and the response to AWQIs is found in **Part 1: Ontario's Safety Net for Drinking Water.**

The standards for drinking water quality in Ontario are prescribed in Ontario Drinking-Water Quality Standards Regulation (O.Reg. 169/03). This regulation prescribes standards for 161 chemical/physical, microbiological and radiological parameters.

Ontario Drinking-Water Quality Standards in O.Reg. 169/03 are adopted from the Canadian Drinking Water Guidelines which are developed by the Federal-Provincial-Territorial Committee on Drinking Water. The guidelines are developed for chemical, microbiological, and radiological parameters using a process that combines risk-based evaluation of scientific data and risk management principles. Health Canada conducts human health risk assessments on each of the parameters while the provinces and territories are responsible for risk management and implementation.

Ontario adopts the health-based guidelines as enforceable drinking water quality standards after a thorough consultation through the Environmental Bill of Rights Environmental Registry (EBR). Those guidelines which are not health-based may be adopted as aesthetic objectives or operational guidelines after consultation on the EBR.

Microbiological Parameters

O.Reg. 170/03 prescribes the testing of drinking water samples for microbiological parameters. O.Reg 170/03 prescribes the type and frequency of samples (i.e., raw water, treated water, or distribution samples) that must be collected. Distribution samples and raw water samples must be collected for all categories of systems. For large municipal residential systems, treated water samples must also be taken from the point at which water enters the distribution system.

Water samples must be tested for total coliforms and for *E. coli*, or fecal coliforms. As microbial contamination may result in immediate health hazards, standards are very stringent. For example, Ontario's standards for *E.coli*, fecal coliform and total coliform are "non-detectable" in a sample volume of 100 millilitres. Testing is also required for general bacteria populations expressed as colony counts on a heterotrophic plate count (HPC).

Chemical Parameters

O.Reg. 170/03 prescribes the testing of drinking water samples for chemical parameters. The testing requirements in the regulation ensure coverage of the necessary health-related parameters identified in O.Reg. 169/03. In some cases, additional parameters and concentration limits are also specified in approvals, orders and other directives issued by the Ministry of the Environment.

As stated, the frequency and type of testing required varies according to a number of factors (e.g. system category, the population served by the system, and the source used for drinking water). For municipal residential drinking water systems, continuous monitoring equipment at the drinking water system is required for turbidity and chlorine residual.

Metals can be present in source water naturally, as a result of industrial activity or through the distribution system and household plumbing.

Some of the chemicals that have been found in treated water are:

- **Arsenic:** Arsenic can be found in both ground water and surface water. It is a known carcinogen and can pose a potential health risk if the drinking water supply contains arsenic above the Ontario Drinking-Water Quality Standard (ODWQS). The ODWQS for arsenic is 0.025 mg/L and is based on a lifetime of exposure. Most recorded exceedances are one-time events.
- **Barium:** The ODWQS for barium is 1.0 mg/L. Barium is a common constituent of hard water but seldom found at levels higher than 1.0 mg/L. Levels of barium higher than 10 mg/L have been associated with high blood pressure. Small exceedances of barium are not expected to cause human health impacts
- **Benzo[A]pyrene:** Benzo[A]pyrene is formed during the incomplete burning of natural compounds that contain carbon, such as wood or fossil fuels. One-time exceedances of this parameter in drinking water are not uncommon and are not expected to cause threats to human health. The current ODWQS for Benzo[A]pyrene is 0.00001 mg/L based on a lifetime of exposure.
- **Chromium:** The ODWQS for chromium is 0.05 mg/L. Chromium is an essential mineral that is not made by the body and must be obtained from the diet. One form of chromium, hexavalent chromium, is toxic at levels exceeding 25 mg/L. Hexavalent chromium is most commonly produced by industrial processes. Short-term, low level exceedances of hexavalent chromium are not expected to cause human health impacts.

- **Fluoride:** The current ODWQS for fluoride is 1.5 mg/L. Some areas in the province have naturally occurring high levels of fluoride in the drinking water. Where the levels of fluoride in the drinking water exceed 2.4 mg/L, the Ministry of Health and Long-Term Care recommends that the local Medical Officer of Health raise public and professional awareness to control excessive exposure to fluoride from other sources. Fluoride may be added to drinking water supplies to control tooth decay. The recommended level for fluoride added to drinking water is 0.5 – 0.8 mg/L.
- **Lead:** The current ODWQS for lead is 0.01 mg/L based on a life-time exposure. Typically, lead found in the drinking water supplies in homes and institutions can result from the corrosion of lead pipes found in older homes or the corrosion of lead solder in plumbing. All of the reported exceedances of lead are short-term. Lead ingestion should be avoided particularly by pregnant women and young children who are most susceptible.
- **Nitrates:** Nitrates, Nitrogen (Nitrate + Nitrite): Nitrates can be present in source water as a result of decaying plant and animal material, contamination by agricultural fertilizers, sewage, and, naturally occurring geological formations containing soluble nitrogen compounds. Short-term exceedances of these compounds are not uncommon. In areas where nitrate levels are above the standard, the public is informed of the potential dangers of using the water for infants. The ODWQS for nitrate (as nitrogen) is 10 mg/L, nitrite (as nitrogen) is 1 mg/L, nitrate+nitrite (as nitrogen) is 10 mg/L based on a lifetime of exposure.
- **Selenium:** The ODWQS for selenium is 0.01 mg/L. Selenium levels in drinking water can almost always be attributed to natural background. It is generally accepted that selenium is a required trace element for humans and animals. Short-term exceedances of selenium are not expected to cause human health impacts.
- **Trihalomethanes:** Trihalomethanes (THMs) are disinfection by-products of drinking water chlorination and can be formed during the treatment process. The ODWQS for THMs is 100 mg/L as a running average of quarterly samples. Drinking water systems that consistently exceed the THM standards are required to take corrective action to reduce THM formation. Short-term exceedances of THMs are not expected to result in human health risk.
- **Uranium:** The ODWQS for uranium is 20 mg/L. Short-term exceedances are not considered to result in human health risks. Uranium is normally present at low levels in rock, soil, and water.

Radiological Parameters

O.Reg. 169/03 prescribes standards for 78 radionuclides. A radionuclide is an unstable form of a chemical element that decays and results in the emission of nuclear radiation. The testing of drinking water samples for radionuclides may be prescribed by conditions specified in the Certificate of Approval, issued by the Ministry of the Environment, to municipal residential drinking water systems. Conditions requiring radionuclide sampling and testing are based on potential human health impacts.

Aesthetic Parameters

Aesthetic objectives are established for parameters which may impair the taste, smell, or colour of water or which may interfere with good water quality practices. Operational guidelines are established for aesthetic parameters which, when controlled, ensure efficient treatment and distribution of water. Aesthetic objectives include pH, colour and turbidity. The objectives also include chemicals, and some of these are:

- **Sodium:** The aesthetic objective for sodium is 200 mg/L. However, people suffering from hypertension or congestive heart disease on a sodium-restricted diet could be at risk at these levels. As a result, the local Medical Officer of Health must be notified when the sodium concentration in the distribution water exceeds 20 mg/L so local physicians can inform their patients on a sodium-restricted diet.
- **Iron:** Iron may be present in groundwater as a result of naturally occurring mineral deposits. Although iron is not a health hazard, levels above 0.3 mg/L can affect taste and impart a brownish colour to laundered goods.
- **Manganese:** The colour-related aesthetic objective for manganese is 0.05 mg/L. Although manganese is not a human health hazard, it does stain laundry fixtures and it does affect the taste of the water. Some ground water sources contain high levels of manganese.

Licensed Laboratories

Since October 1, 2003, laboratories must obtain a drinking water testing licence issued by the Ministry of the Environment which authorizes the laboratory to conduct drinking water tests. The licence specifies the microbiological, chemical or radiological test that the laboratory may perform.

For more about licensed laboratories, see **Part 3: 2004-05 Ministry Inspection Program**.

Treatment

It is the treatment processes used by the drinking water system that reduce or eliminate the potential for the presence of pathogens (organisms that can cause illness) in drinking water. Different water sources necessitate different levels of treatment. A basic summary of treatment processes follows.

- **Filtration:** filtration of raw water removes particles that may hide or protect pathogens such as viruses, bacteria and protozoa, and helps to ensure that effective primary disinfection can be carried out.
- **Primary disinfection:** primary disinfection inactivates pathogens before the water is delivered to the distribution system. Effective disinfection can be accomplished by chemical means such as chlorine, or by alternatives such as ultraviolet (UV) light.
- **Secondary disinfection:** secondary disinfection ensures maintenance of a chlorine residual to protect the drinking water from microbiological recontamination or bacterial growth.

2. Municipal residential drinking water systems

TAPPING IN

KEY FINDINGS

- More than 850,000 microbiological and chemical tests were conducted
- 99.74 per cent of the water quality tests met provincial standards

  Of these:
  - 99.78 per cent of microbiological water quality tests met provincial standards and
  - 99.41 per cent of chemical water quality tests met provincial standards

Background

About 82 per cent of Ontarians obtain their drinking water from municipally-owned drinking water systems. (The remaining population obtains water either from non-municipal residential systems or private supplies such as wells.)

Based on definitions set out in the SDWA, a municipal residential drinking water system is one:

- that is owned by a municipality or a municipal service board or a corporation established under the Municipal Act that is serving six or more private residences
- from which a municipality obtains or will obtain water for the purpose of serving six or more private residences under a contract between the municipality and the owner of the system.

O.Reg. 170/03 establishes specific requirements for the minimum levels of treatment that must be provided. It identifies the types and capabilities of treatment processes and equipment that can be used in achieving the results from treatment that are necessary when drinking water is being provided to the public.

The requirements for drinking water systems using groundwater as a source are different from those which use surface water or groundwater under the direct influence of surface water. The regulation clearly sets out requirements for primary and secondary disinfection. More detail on the specific regulatory treatment requirements is provided in the *Procedure for Disinfection of Drinking Water in Ontario*[5].

2004-05 Summary

In 2004-05, 850,986[6] microbiological and chemical tests were reported by municipal residential drinking water systems and were entered into the Ministry's Drinking Water Information System (DWIS).

Of these water quality tests, 99.74 per cent met provincial standards and 0.26 per cent (2,237 of 850,986 samples) of water quality tests exceeded provincial standards.

5 The *Procedure for Disinfection of Drinking Water in Ontario* is adopted by reference in O.Reg. 170/03, giving it the force of law.

6 This report cites 850,986 water quality test results. The Chief Drinking Water Inspector's *Progress Report* (released May 31, 2005) cites 763,096. The difference in the numbers reflects the number of 2004-05 normal test results that were uploaded to the Ministry's DWIS database after the Progress Report was published. Normal test results that do not exceed standards or objectives are often not uploaded right away. Any exceedance of standards or objectives is reported immediately.

Microbiological Parameters

As Table 1 shows, in 2004-05, 73 per cent of all exceedances (1,633 of 2,237 samples) were for microbiological parameters.

The presence of coliforms does not necessarily indicate an immediate health hazard, but rather signals that the effectiveness of the treatment, specifically the disinfection process, has been compromised.

Only a small subset of microbiological parameters are capable of causing illness and their detection is cause for corrective action to be taken. One of these is *E.coli*. The presence of *E.coli* indicates fecal contamination of water and may also indicate that more harmful species of *E.coli* are present, and appropriate steps must be taken.

TABLE 1: Summary of Drinking Water Test Results for all Municipal Residential Drinking Water Systems from April 1, 2004 to March 31, 2005

PERIOD	APRIL 01, 2004 TO MARCH 31, 2005			
PARAMETER NAME	# OF RESULTS	# OF EXCEEDANCES	% EXCEEDANCE	% MEETING STANDARDS
Microbiological				
E.Coli	240,809	72	0.03	99.97
Fecal Coliform	8,434	12	0.14	99.86
Total Coliform	250,170	819	0.33	99.67
Other Micro*	249,241	730	0.29	99.71
Microbiological Total	748,654	1,633	0.22	99.78
Chemical	102,309	603	0.59	99.41
Radiological	23	1	4.35	95.65
Total	**850,986**	**2,237**	**0.26**	**99.74**

* General background bacteria and indicators of deteriorating water quality

Chemical Parameters

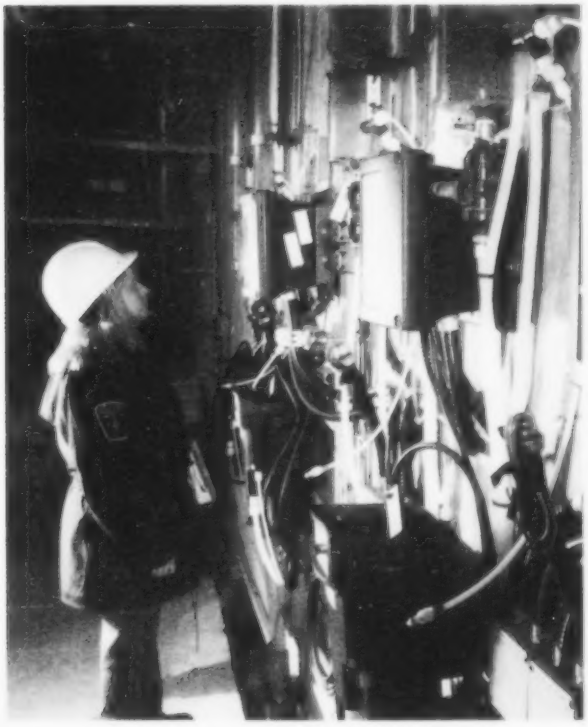
Drinking water quality standards for chemical parameters are set at levels where no adverse effect is observed with an additional safety factor applied. As a result, any one-time or short-term exceedance of chemical compounds is unlikely to lead to an adverse human health effect. Results for aesthetic parameter exceedances are reported as a subset of chemical parameter exceedances.

TABLE 2: Chemical Standard Exceedances and Aesthetic Objective Exceedances in Municipal Residential Drinking Water Systems 2004-05

PARAMETER	NUMBER OF EXCEEDANCES
Chemical	
Arsenic	1
Benzo[A]Pyrene	3
Fluoride	53
Lead	18
Nitrates	19
Nitrites	2
Nitrogen; Nitrate+Nitrite	31
Trihalomethane	28
Uranium	2
Chemical Total	**157**
Aesthetic	
Iron	5
Manganese	4
Sodium	437
Aesthetic Total	**446**
Total	**603**

About one-quarter (603 of 2,237 samples) of all exceedances reported by municipal residential drinking water systems were related to chemical parameters. Most of these, approximately 75 per cent (446 of 603 samples), were the result of exceeding aesthetic objectives, primarily sodium. While only one sodium sample result exceeded the 200 mg/L aesthetic objective in 2004/05, sodium levels above 20 mg/L and below 200 mg/L (436 samples) are included in this report as these results must be reported to the local medical officer of health so that physicians can advise patients who are on sodium-restricted diets for health reasons.

Aesthetic objectives are not health-related, but are established for parameters which may affect the taste, smell or colour of water, or which may interfere with good water quality control practices. In general, exceedances of aesthetic objectives do not directly affect the safety of a water supply or pose an immediate health hazard.



Inspecting digital display of continuous monitoring equipment

Municipal Annual Reports

Information on the results of each system may be found in the annual report prepared by municipalities to fulfil the public reporting requirements of O.Reg. 170/03.

For municipal residential drinking water systems (and non-municipal year-round residential systems), annual reports must be made available by February 28 and cover January to December of the previous year.

These annual reports include:

- a brief description of the drinking water system, including a list of water treatment chemicals used by the system during the period covered by the report;
- a summary of the results of tests required under the regulation, or a Certificate of Approval or a Provincial Officer Order for the period covered by the report; and
- a description of any corrective actions taken in accordance with O.Reg. 170/03 during the period covered by the report.

Copies of an annual report must be made available to the public by the municipality without charge. If a municipality has more than 10,000 people, the annual report must also be made available on its website.

Drinking water systems serving designated facilities and non-municipal year-round residential drinking water systems

3.

TAPPING IN

KEY FINDINGS

- 99.06 per cent of tests conducted by systems serving designated facilities met provincial standards
  - 99.12 per cent of microbiological water quality tests met provincial standards and
  - 98.58 per cent of chemical water quality tests met provincial standards
- For non-municipal year-round residential systems, 99.41 per cent of tests met provincial standards
  - 99.43 per cent of microbiological water quality tests met provincial standards and
  - 99.28 per cent of chemical water quality tests met provincial standards

Background

The regulatory framework for both systems serving designated facilities and non-municipal year-round residential systems was implemented on a different timeframe than for municipal residential systems, which were required to meet Ontario's stringent new requirements in 2000.

Non-municipal year-round residential systems were required to start sampling and testing water by June 1, 2003. To allow time for these systems to invest in capital upgrades, the deadline for them to install treatment equipment is July 1, 2006, for both surface water and groundwater sources. As with municipal residential drinking water systems, minimum treatment requirements require primary disinfection for groundwater sources and filtration, and primary disinfection for surface water sources.

A designated facility (DF) may be served by any one of a wide range of drinking water systems. They are considered a separate category because they are buildings and places serving people who may be more susceptible to illness from drinking water of poor quality. Designated facilities include:

- children's camps
- day nurseries as defined in the *Day Nurseries Act* (i.e. receive six or more children who are not of common parentage)
- other child and youth care facilities that provide services or are licensed under the *Child and Family Services Act* or *Ministry of Community and Social Services Act* (e.g. child development, treatment, or welfare services, young offender services, Ontario Early Years Centres, licensed children's residences)
- nursing homes and other health care facilities

TABLE 3: The number of different registered systems serving designated facilities as of March 31, 2005

PRIMARY FUNCTION OF SYSTEMS SERVING DESIGNATED FACILITIES	NUMBER OF SYSTEMS SERVING DESIGNATED FACILITIES
Campground	290
Child Care	51
Community Centre	47
Health Care	40
Residential	194
School	558
Youth Care	24
Other	297
Total	1,501

- schools, private schools, and university/college facilities
- social care facilities receiving funding from the Government of Ontario (e.g. sheltered workshops, employment programs, violence against women programs and places funded under the Aboriginal Healing and Wellness Strategy)

For systems serving designated facilities, testing requirements were made effective on June 1, 2003. Systems serving designated facilities, except for children's camps and seniors' residences, have been required to treat their water since July 1, 2003. Children's camps and seniors' residences have been required to comply with the treatment requirements of O.Reg. 170/03 since July 1, 2004.

Since these systems are often smaller in scope than municipal residential drinking water systems, the staff often has multiple responsibilities, only one of which is operating the drinking water system. As a result, their training needs are also different. The Walkerton Clean Water Centre (WCWC), an agency of the Ontario Government, has the mandate to help meet the distinct training needs of operators who live in small, rural or remote communities.

2004-05 Summary

In 2004-05, more than 1,500 systems serving designated facilities and 300 non-municipal year-round residential drinking water systems submitted water quality tests to the Ministry.

More than 160,000 microbiological and chemical tests were conducted by drinking water systems serving designated facilities. Of these water quality tests, 99.06 per cent of tests conducted by designated facilities met provincial standards.

Non-municipal year-round residential systems serve private subdivisions, condominium or townhouse complexes, apartment buildings, mobile home parks, as well as year-round cottage developments and trailer parks. For these systems, 99.41 per cent of tests submitted to the Ministry of the Environment met provincial standards.

As with municipal residential systems, both categories of drinking water systems must use a licensed laboratory to analyze their drinking water samples.

Microbiological Parameters

As Table 4 shows, in 2004-05, for systems serving designated facilities, 84 per cent of all exceedances (1,260 of 1,505 samples) were for microbiological parameters.

TABLE 4: Summary of drinking water test results for systems serving designated facilities and for non-municipal year round residential systems.

	BY SYSTEMS SERVING DESIGNATED FACILITIES				BY NON-MUNICIPAL YEAR ROUND RESIDENTIAL SYSTEMS			
PARAMETER NAME	# OF RESULTS	# OF EXCEEDANCES	% EXCEEDANCE	% MEETING STANDARDS	# OF RESULTS	# OF EXCEEDANCES	% EXCEEDANCE	% MEETING STANDARDS
Microbiological								
E.Coli	48,160	34	0.07	99.93	18,091	12	0.07	99.93
Fecal Coliform	308	2	0.65	99.35	84	–	–	100.00
Total Coliform	48,251	508	1.05	98.95	18,128	217	1.20	98.80
Other Micro*	46,617	716	1.54	98.46	16,483	71	0.43	99.57
Micro-biological Total	143,336	1,260	0.88	99.12	52,786	300	0.57	99.43
Chemical	17,248	245	1.42	98.58	9,250	67	0.72	99.28
Radio-logical	–	–	NA	NA	–	–	NA	NA
Total	**160,584**	**1,505**	**0.94**	**99.06**	**62,036**	**367**	**0.59**	**99.41**

* General background bacteria and indicators of deteriorating water quality

Note: This table is a summary of drinking water test results submitted to the Ministry's Drinking Water Information System for 1501 systems serving designated facilities (that include large municipal non-residential systems, large non-municipal non-residential systems, non municipal seasonal residential, small municipal non-residential systems, and small non-municipal non-residential systems) and 303 non-municipal year round residential systems.

As stated previously, though only a small subset of these are capable of causing illness, any level of detection is cause for corrective action to be taken. For non-municipal year-round residential systems, about the same percentage of exceedances – 82 per cent (300 of 367 samples) – were for microbiological parameters.

The Ministry initiates a priority field response, including an immediate site visit, in cases involving *E.coli* in systems serving designated facilities and non-municipal year-round residential systems.

The protocol is slightly different in cases where there are repeated exceedances at non-municipal year-round residential systems which have yet to install treatment equipment (because the deadline is July 1, 2006). In these instances, the level of subsequent responses depends on the results of the consultation that occurs between the local medical officer of health and local Ministry of the Environment's drinking water inspectors. After the consultation, the Ministry may determine that the matter is appropriately dealt with by the local medical officer of health and his/her authority

under the *Health Protection and Promotion Act*. The local medical officer of health's response could include issuing a boil water advisory or an order.

This approach reflects the fact that a lack of treatment, particularly of surface water sources, may result in frequent, repeated contamination. For an overview of the Ministry's standard procedure, see **Part 1: Ontario's Safety Net for Drinking Water**.

For systems serving designated facilities and non-municipal year-round residential systems, the Ministry initiates a follow-up inspection in certain circumstances, such as determining that re-sampling or corrective action has failed to be effective in resolving the adverse drinking water event.

Chemical Parameters

For systems serving designated facilities, about 16 per cent of all exceedances (245 out of 1,505 samples) are related to chemical parameters. Of these, about half were exceedances (121 of 245 exceedance) related to the sodium parameter. Seventeen of the sodium exceedances were above the 200 mg/L aesthetic objective.

For non-municipal year-round systems about 18 per cent of all exceedances (67 of 367 samples) were for chemical parameters and, of these, 72 per cent (48 of 67 exceedances) were for sodium. Eight of the sodium exceedances were above the 200 mg/L aesthetic objective.

Again, aesthetic parameters are not health-related, but are established for parameters that may affect the taste, smell or colour of water, for example. These exceedances do not directly affect the safety of a water supply or pose an immediate health hazard.

TABLE 5: Chemical Standard Exceedances and Aesthetic Parameter Objective Exceedances in Systems Serving Designated Facilities and Non-Municipal Year Round Residential Systems (NMYRR) 2004-05

PARAMETER	NUMBER OF EXCEEDANCES	
	Systems Serving Designated Facilities	NMYRR
Chemical		
Arsenic	1	1
Barium	0	6
Chromium	1	0
Fluoride	19	2
Lead	1	0
Nitrates	48	3
Nitrites	6	0
Nitrogen; Nitrate+Nitrite	45	2
Selenium	1	0
Trihalomethane	0	4
Uranium	2	1
Chemical Total	**124**	**19**
Aesthetic		
Iron	0	0
Manganese	0	0
Sodium	121	48
Aesthetic Total	121	48
Total	**245**	**67**

Annual Reports

Consistent with the requirement for municipal residential systems, owners of systems serving designated facilities and non-municipal year-round systems must make information available to consumers.

The owner of the system must keep copies of the annual report on site and make them available on request, free of charge, for the previous two years. The owner must also make available under the same conditions all required test results, approvals from the Ministry of the Environment and orders issued within the previous two years.

Designated facilities include schools

Ontarians' water is safe, but there are still areas where there is a general need for improvement in compliance with regulatory requirements.

Part 3: 2004-05 Ministry Inspection Program

MOE inspector conducting field audit test using hand-held chlorine residual analyzer

This section provides 2004-05 inspection results of municipal residential drinking water systems and licensed laboratories.

Opposite: Settling tanks in a water treatment plant

1. 2004-05 Drinking Water Inspection Program

TAPPING IN

KEY FINDINGS

- 729 municipal residential drinking water systems were inspected
- 77 municipal residential drinking water systems received orders

Background

Ontario's drinking water inspection program ensures that municipal drinking water systems are following all applicable provincial environmental legislative and regulatory requirements.

The Ministry of the Environment uses its "Drinking Water Inspections Protocol" (Protocol) to guide its drinking water inspections. Ministry staff have used it to conduct inspections of municipal residential drinking water systems since November 2002. It requires inspection of source, treatment and distribution components of municipal residential drinking water systems. The Protocol is consistent with Commissioner O'Connor's recommendations related to inspections. The Protocol is updated, as needed, to ensure it remains consistent with the legislation and with new developments in drinking water standards.

The Protocol has 14 inspection modules that have a comprehensive list of potential inspection activities. The inspector selects those applicable to the particular system to be inspected, usually based on the source of the water supplied to the system. The 14 modules are:

1. **Source:** Source inspection activities are organized by the characteristics of the source (e.g. groundwater, GUDI (groundwater under the direct influence of surface water), or surface water). The source/supply of water is confirmed and visually inspected, including an inspection of each well head or surface water source, for visual sources of contamination.
2. **Permit to Take Water:** A Permit to Take Water (PTTW) is required under the *Ontario Water Resources Act* for anyone taking more than 50,000 litres a day from surface or ground water. Inspection activities assess compliance with water taking limits imposed and any special terms and conditions that form part of the PTTW. These conditions ensure that the water taking for the purpose of supplying the drinking water system would not negatively impact the groundwater or surface water source or its existing users.
3. **Capacity Assessment:** In order to ensure that adequate minimum treatment is provided to all drinking water before entering the distribution system, the facility must be operated within its design capabilities. The inspection activities ensure that adequate flow measuring devices are installed, and that flow rates are maintained within the Certificate of Approval limits.
4. **Treatment:** The treatment module includes activities associated with unit treatment processes, operation and maintenance and process control. The inspection activities related to treatment processes are tailored to the type of treatment required for the facility.
5. **Process Wastewater:** Process wastewater may have an environmental or health impact depending on where the wastewater is disposed of and how (or if) the wastewater is

treated before disposal. The operator must take the necessary steps to ensure that any wastewater discharge is handled and monitored in accordance with the Certificate of Approval requirements and that the discharge does not cause impairment to the environment.

6. **Distribution System:** The purpose of inspecting the distribution system is to confirm, to the extent possible, that it is continuously delivering potable water to the consumer. The inspector reviews the key components of the distribution system (e.g. reservoirs and storage tanks) to ensure that they are adequately maintained. This includes assurances that maintenance and repairs are properly documented and overseen by appropriate personnel.
7. **Operations Manuals:** Complete and accurate operations manuals ensure that operators have access to information necessary for the safe and efficient operation of the facility. The owner of a drinking water system must ensure that operations manuals exist for all components of the system and that they are complete, accurate and available to operating staff. The inspector examines the manuals to ensure that they include those items required by the Certificate of Approval and regulation. Items that may be required and included in an operations manual are drawings, process descriptions and key operational information.
8. **Contingency and Emergency Planning:** As required by the Certificate of Approval, the owner/operator must have a contingency/emergency plan to cover potential emergencies that could affect the system. The inspector verifies that the owner/operator has dealt with emergencies in a manner that ensured continued compliance with regulations, and that procedures have been established to adequately manage emergency situations. As required by the Certificate of Approval, system staff should be aware of these procedures and have access to them as needed. In addition, the owner/operator should take measures to secure the various components of the drinking water system against intrusions.
9. **Logbooks:** Many types of information must be recorded regularly by the operational staff of a drinking water system. In general, inspectors assess the data and information contained in logbooks for compliance purposes. Logbooks must accurately record information such as results for operational tests and samples, as well as abnormal or unusual events.
10. **Water Quality Monitoring:** Effective monitoring of the drinking water system is paramount to ensuring that water quality is maintained in accordance with regulations, policies and established standards. This module focuses on inspecting the key elements of a monitoring program such as sampling, continuous analysis, analytical results and licensed laboratory services.
11. **Certification and Training:** This module ensures the proper classification of the drinking water system and ensures that operational staff possess the required certification and training. Highly skilled and trained operational staff is key to the daily management of the drinking water system and the ability to proactively address issues that could pose future risks.

Hand-held chlorine residual analyzer

12. **Consumer Relations:** The owner/operator must have a process in place for tracking, responding to and investigating system-related complaints as may be required by the Certificate of Approval. The inspector may inspect the logs to determine if there are any indicators of adverse water conditions or other issues that were the cause of complaints. The inspector will also ensure that documents that are required to be available to the public, such as sample results and annual reports, are current.
13. **Reporting, Notification and Corrective Actions:** This module focuses on whether the drinking water system takes the prescribed appropriate action on adverse conditions and notifies the proper authorities. The owner/operator is required by the Drinking-Water Systems Regulation (O.Reg. 170/03) and the Certificate of Approval to submit reports to the Ministry on various drinking water system activities.
14. **Other Inspection Findings:** This module requires the inspector to assess compliance with any non-compliance items that were discovered during the previous inspection report period. It also allows for the inclusion of any non-compliance items that may have been found but were not covered in any of the inspection report sections.

Drinking water inspectors notify the water system owner and operator in advance of an announced inspection. At that time, drinking water inspectors will provide the scope of the inspection, and provide a list of the documents they will need to review while on site. (One in three inspections is unannounced.)

During the on-site portion of the inspection, drinking water inspectors will provide information on the reasons for the inspection, the statutory authority (the law) for the inspection and the scope of the inspection. Drinking water inspectors also address concerns brought forward by the owner/operators and provide detailed explanations of Ministry requirements, as necessary. Owners and operators are encouraged to ask any questions they may have about the inspection process or Ministry guidelines and requirements to assist with the shared goal of continuous improvement.

After the on site component of the inspection, drinking water inspectors may contact the owner or operator prior to finalizing an order or inspection report to clarify information or to discuss details.

Under the Drinking-Water Compliance and Enforcement Regulation (O.Reg. 242/05), the Ministry of the Environment is required to send a copy of the final inspection report within 45 days of completing all aspects of an inspection to: the owner[7] of the system; the local medical officer of health; the conservation authority that has authority over the area in which the system is situated or, where there is no conservation authority, the appropriate office of the Ministry

7. *Note that some sections of the SDWA are unproclaimed. In the future, there will be an accredited operating authority in charge of every municipal drinking water system. When these are established, a copy of the inspection report will also be sent to the relevant operating authority.*

of Natural Resources; and the responsible Director in the Ministry of the Environment.

Additional information about the Ministry's inspection process is in **Part 1: Ontario's Safety Net for Drinking Water.**

2004-05 Summary

Between April 2004 to March 31, 2005, 729 inspections of municipal residential drinking water systems were completed under the Ministry's inspection program.

TABLE 6: Municipal Residential Drinking Water Systems (MRDW) that Received Orders in 2004–05

MUNICIPAL RESIDENTIAL DRINKING WATER SYSTEMS (MRDW) THAT RECEIVED ORDERS IN 2004-05	
Total number of MRDW systems with orders	77*
Total number of MRDW systems inspected	729
Percentage of MRDW systems that were inspected and received orders	10.6%

* The May 31, 2005, Progress Report stated that the total number of MRDW systems with orders numbered 65, based on 591 inspection reports analyzed as of April 2005. This report uses final numbers for 2004-05.

The Ministry also conducts planned inspections on systems in unorganized territories owned by Local Services Boards, and on private residential systems operated by municipalities as a result of a Ministry order issued under Section 114 of the *Safe Drinking Water Act* or Section 62 of the *Ontario Water Resources Act*. The Ministry has recently revised its rules for classifying inspections and these types of inspections are now reported separately from inspections of municipal residential drinking water systems. In 2004-05, 6 systems owned by Local Services Boards and 3 systems under a S.114 or S.62 order were inspected.

In 2004-05, 77 municipal residential drinking water systems received orders and one local services board received an order.

Note that when a municipality receives an order, it does not necessarily mean that the drinking water is unsafe to drink. Orders are also issued for many non-compliance situations where there is no direct threat to public health (e.g. failure to meet an administrative requirement), but where the drinking water inspector deems an order is needed to get the system operator to take corrective action. A summary is provided of municipal residential drinking water systems and a local services board that received orders in 2004-05. See **Appendix 2**.

Ontarians' water is safe, but there are still areas where there is a general need for improvement in compliance with regulatory requirements.

The specific compliance requirements, where a need for improvement was identified during 2004-05 inspections, were based on the frequency and extent to which they could compromise the ability to provide safe water and are listed as follows.

- operations and maintenance manuals are not meeting the requirements set out in the facility's Certificates of Approval or engineering evaluation reports
- not all required regulated samples are being obtained for physical and chemical analyses
- operations and maintenance manuals do not contain plans, drawings and process descriptions sufficient for the safe and efficient operation of the system
- system plans, where applicable, are not being kept up-to-date and made available to operators and drinking water inspectors in accordance with requirements in Certificates of Approval

MOE inspector documenting audit samples prior to submission to MOE laboratory

- records indicating the operator-in-charge are not being kept, or not being kept consistently
- disinfectant residual levels are not being measured and recorded at the regulated frequency to ensure that disinfection levels in the distribution system are maintained
- approved treatment equipment is not being installed in accordance with the Certificate of Approval or within the timeframe required
- not all legislated microbiological water quality monitoring requirements are being met
- maximum water takings are not in accordance with those allowed under the Permit to Take Water
- flow rates are not being maintained below the maximum flow rates or rated capacity identified in the Certificate of Approval

While many systems do meet these requirements, these are important operational matters for all systems to review on an ongoing basis.

For those systems that did not meet these (or other) requirements, the Ministry's drinking water inspectors track the actions of the owner/operator to ensure that the problem is dealt with appropriately. For instance, the drinking water inspector monitors the timeliness and completeness of actions taken to come into compliance, ensuring that full compliance has been established in the required timeframe. There are also conditions that, if met, require the drinking water inspector to conduct a follow-up inspection. Under the Drinking-Water Compliance and Enforcement Regulation (O.Reg. 242/05), there are legal requirements to conduct follow-up inspections in prescribed instances.

The past performance of drinking water systems is also taken into account when the Ministry sets its inspection schedule for the year and in making a decision to conduct an announced or unannounced inspection. Sometimes an unannounced inspection may be considered when a drinking water system has compliance issues or there are concerns regarding the system's operation. The Ministry's inspection program always gives priority to higher risk systems.

The Ministry is considering enhancement of its planned compliance program for designated facilities and non-municipal year-round residential systems. For these systems, inspections will continue to be undertaken with a strong education and outreach focus so that the operators of these systems, many of whom have multiple responsibilities, become more familiar with their responsibilities for providing safe drinking water in accordance with Ontario's regulatory requirements.

TAPPING IN

KEY FINDINGS

- 136 inspections were completed, with at least one planned and one unannounced inspection performed at each of the 57 licensed laboratories in Ontario
- 14 of these inspections were carried out in response to public complaints

Background

The stringent requirements for laboratories that test drinking water are governed by the Drinking-Water Testing Services Regulation (O.Reg. 248/03) under the *Safe Drinking Water Act*, 2002 (SDWA). With this regulation, Ontario became not only the first province in Canada, but the first jurisdiction in all of North America, to require that all potable drinking water be analyzed by a laboratory that is licensed for specific testing.

All testing laboratories, private, municipal and provincial, must meet certain requirements before they are permitted – licensed – to conduct tests on drinking water samples. Laboratories outside of Ontario wishing to analyze Ontario drinking water must be placed on the Director's Eligibility List.

The Ministry of the Environment administers the laboratory licensing program. All laboratories seeking licences are required to provide documented evidence to the Ministry that they meet certain criteria which include, but are not limited to:

- appropriate Standards Council of Canada (SCC) accreditation for the specific methods seeking licensure
- ability of the laboratory to analyze drinking water samples at appropriate low-level detection limits
- appropriate application and use of internationally referenced analytical methodology
- appropriate application and use of instrumentation designed to analyze specific parameters in drinking water
- documentation of policies and procedures pertaining to the laboratory's regulatory requirements

TAPPING IN

LABORATORY ACCREDITATION

Ontario's drinking water testing laboratories pursue continuous improvement through recognized laboratory accreditation programs.

The *Safe Drinking Water Act, 2002*, designates two bodies to administer an accreditation program for laboratories performing drinking water testing: the Standards Council of Canada (SCC) and the Canadian Association of Analytical Environmental Laboratories (CAEAL). CAEAL administers the accreditation program by performing the laboratory assessments and managing the performance testing (PT) program. Upon recommendation by CAEAL, the SCC grants laboratory accreditation. Once a laboratory has attained appropriate SCC accreditation, it may then apply for a drinking water testing licence from the Ministry of the Environment.

Accreditation involves a mandatory on site assessment once every two years with the possibility of verification audits. Mandatory proficiency testing is required for more than 80 per cent of the drinking water contaminants listed in Ontario drinking water legislation. Failure of proficiency testing studies can result in the suspension of laboratory accreditation, which would result in the suspension of the laboratory's drinking water testing licence. No laboratory licences have been revoked to date by the Ministry.

Once licensed, laboratories must:

- comply with regulatory requirements for notification of adverse water quality and reporting of all drinking water testing results
- provide guidance to drinking water system owners (operators) for sample handling, storage, transport and labelling
- comply with regulatory requirements for approved testing methods and the subcontracting of analytical tests to other licensed laboratories
- provide for adequate facilities, resources and training of qualified staff to conduct drinking water testing

For more information, refer to **Part 1: Ontario's Safety Net for Drinking Water.**

The Ministry's Laboratory Licensing Program was launched on October 1, 2003. The following table provides statistics of the Laboratory Licensing Program to date.

TABLE 7: Cumulative Number of Laboratories Licensed per Year since October 2003

	OCTOBER 1, 2003	APRIL 1, 2004	APRIL 1, 2005
Laboratory Licensure	51	54	57
Microbiological	41	41	44
Inorganic	28	28	31
Physical/other class	24	28	28
Organic chemistry class	21	21	23
Radioanalytical class	2	3	3

To assure that testing capacity is sufficient, a number of licensed laboratories provide "full-suite" and/or "24/7" testing services. These services include all regulated tests except for radioanalytical testing.

The Ministry's laboratory inspection team uses a specialized Laboratory Inspection Protocol to inspect licensed laboratories. Inspections of licensed laboratories focus on three distinct areas:

- health-related regulatory compliance (e.g. non-reporting of adverse test results or use of a non-licensed laboratory for the testing of drinking water)
- administrative regulatory compliance (e.g. non-reporting of analytical data to the Ministry's Drinking Water Information System (DWIS) or failure to post the laboratory licence in a conspicuous place)
- laboratory best practices (e.g. policies/procedures, staff training)

Each inspection is tailored to the specific testing performed by the licensed laboratory. Some of the larger laboratories have up to 150 drinking water test methods covering over 900 different parameters. Licensed laboratories are inspected to ensure they are meeting all regulatory requirements and any special conditions of their licences (e.g. not filtering drinking water prior to conducting analyses, not incubating microbiological samples over weekends).

If a laboratory inspector finds an instance of non-compliance on a health-related item (e.g. laboratory failure to report an *E.coli* result), the laboratory inspector immediately documents the occurrence so that the Ministry can contact the owner of the drinking water system and the local medical officer of health.

If there is non-compliance on a non-health-related item (e.g. failure to display the licence at the laboratory), the inspection report specifies the necessary abatement measures that must be taken to bring the laboratory into compliance in a required timeframe. Upon finding an unacceptable best practice issue, the laboratory inspector will recommend that the laboratory make the necessary changes by the time of the next laboratory inspection.

2004-05 Summary

Each licensed laboratory is inspected at least twice per year – one planned inspection and one unannounced. In 2004-05, there were 136 inspections, including at least one planned and one unannounced inspection, performed at every licensed laboratory. In response to public complaints and Ministry staff concerns, inspectors may be required to perform "responsive inspections".

TABLE 8: Summary of Laboratory Inspections in 2004–05

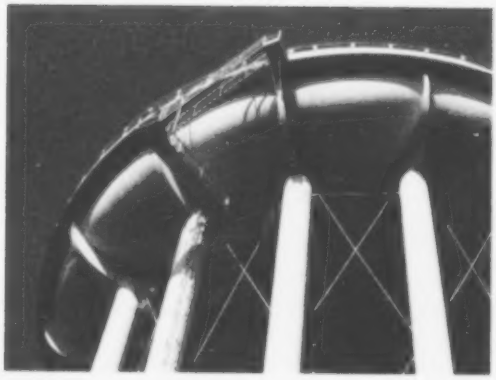
INSPECTION TYPE	INSPECTIONS COMPLETED
Unannounced (with microbiological focus)	60
Announced – pre-licensing	5
Announced (with inorganic chemical focus)	57
Responsive	14
Total	136

Licensed Laboratory Inspection

In 2004-05, the Ministry's Laboratory Inspection Team carried out 14 responsive inspections. The majority of responsive inspections were a result of complaints received by regulated drinking water system owners/operators concerned about unregulated drinking water "testers" who were selling water filtration equipment door to door in various communities. Three Provincial Officers Orders' were issued forbidding the companies involved to test chlorine residual and lead in drinking water unless they became licensed by the Ministry and were adequately qualified.

Transparency, vigilance, awareness, and action: these are all necessary for continuous improvement, to enhance accountability and meet the public's expectation for – and their right to – safe drinking water.

Next Steps



Moving toward a safer and more reliable drinking water protection framework is the goal of the Ministry's drinking water safety net.

Important improvements that are underway include prioritizing inspection activities based on the potential risk to public health. This will be done by using focused inspection protocols for municipal residential drinking water systems and licensed laboratories. This will help to maximize the benefits of the Ministry's inspection programs by allowing resources to be directed where they are needed most – systems and licensed laboratories that need to make significant improvements in their operations.

The Drinking Water Compliance and Enforcement Regulation (O.Reg. 242/05) enables – for the first time – members of the general public to request an investigation of an alleged offence by a municipal residential drinking water system under the *Safe Drinking Water Act, 2002*. This opens up a new level of public input and oversight.

The implementation of the proposed *Clean Water Act, 2005* (described earlier in this report) is a key component of strengthening Ontario's safety net. Municipalities, conservation authorities, landowners, industry, community groups, First Nations and the public are working together to ensure that locally-appropriate, science-based solutions are found to protect municipal drinking water at the source.

Investment in infrastructure, like source protection, is key in helping to prevent problems from happening in the future. In August, 2004 the government established a Water Strategy Expert Panel to provide recommendations on the best ways to organize systems and deliver safe, clean affordable water and wastewater services in the province. The May 2005 report of the Expert Panel, entitled 'Watertight: the case for change in Ontario's water and wastewater sector', outlined concerns about the state of Ontario's water infrastructure. While data shows that Ontario's water is safe and of high quality, many boil water advisories get issued as a precautionary measure when there is a mechanical breakdown in the infrastructure. One broken pipe can cause anxiety and disruption in hundreds of households. Continued investment in infrastructure will lower the risk of these sorts of disruptions and help us reduce the risks of contaminated drinking water.

The Chief Drinking Water Inspector is committed to making the results of drinking water system inspections more transparent to the public.

The inspection protocol includes more than 130 questions that address a wide range of issues, from administrative procedures to drinking water quality monitoring (see Part 3 of this report for more details). A methodology is being developed to translate annual drinking water system inspection results into an easy-to-understand measure that may be used to assess the inspection findings for all municipal residential drinking water systems. The primary goals of introducing this type of assessment are to encourage ongoing improvement of these systems, and to establish a way to measure these improvements. Details of the proposed methodology are provided on the next page.

The Chief Drinking Water Inspector will be consulting with municipalities and other stakeholders on the proposed methodology for measuring inspection results as applied to municipal residential drinking water systems. When finalized, it will be possible to take the inspection results for any year and derive a province-wide report on the findings for municipal residential drinking water systems.

The next Annual Report of the Chief Drinking Water Inspector will report in more detail on all the activities described in this section.

TAPPING IN

PROPOSED METHODOLOGY FOR MEASURING INSPECTION RESULTS

The proposed methodology for measuring inspection results will be directly based on the findings of the Ministry's municipal residential drinking water system inspections. The inspection protocol consists of a list of questions, described more fully in Part 3 of this report, that provide definitive guidance to the ministry's inspectors in conducting inspections of drinking water systems. A team of drinking water specialists in the Ministry of the Environment will assess each of the inspection questions to determine the potential to compromise the delivery of safe water. The results of each system's inspection will then be examined. Based on the number of areas where the system was deemed to be non-compliant during the inspection, and the significance of these areas to potential human health impacts, a rating will be calculated for each system. A low rating would not necessarily mean that the drinking water provided by that system is unsafe. However, it would indicate the degree to which there is room for improvement in meeting the province's regulatory requirements.

The rating for a drinking water system will reflect that system's inspection results for the reporting year. When the methodology is applied consistently over a period of years, it can serve as a comparative measure. Each system will be able to track its performance over time, which will encourage continuous improvement and allow systems to identify specific areas requiring attention. This system for assessing inspection findings will be used as a tool to track progress towards the Chief Drinking Water Inspector's goal of achieving 100% compliance with the regulatory framework on a province-wide basis.

Glossary

A

Administrative Requirement: a legally imposed administrative task related to the operation of a drinking water system.

Adverse Water Quality Incident: an event in which an adverse test result triggers a process of notification and corrective measures.

Advisory Council on Drinking Water Quality and Testing Standards: recommended by Commissioner O'Connor in the Part Two Report of the Walkerton Inquiry, and created under the *Safe Drinking Water Act, 2002*. The Council's mandate is to advise the Minister of the Environment on drinking water standards, legislation, regulations, and issues related to drinking water.

B

Backflow Preventer: a mechanical device for a water supply pipe to prevent the backflow of water into the water supply system from the connections on its outlet end.

Boil Water Advisory: a notice issued by a local medical officer of health indicating water should be boiled before human consumption.

C

Categories of Drinking Water Systems: see "Categories of Drinking Water Systems" at the end of this section.

Certificate of Approval: a legal instrument which permits the construction or alteration of a drinking water system, or parts thereof. The Ministry issues this document after an engineering review of the proposed facilities and when it is satisfied that the facilities will work as intended and will be able at all times to supply drinking water meeting Ontario Drinking-Water Standards and requirements of O.Reg. 170/03.

Chemically Assisted Filtration: a water treatment process that uses chemicals, such as alum, as a coagulant to bind small particles together into larger particles that are then easily filtered out when the water passes through sand beds or other filters.

Chlorine Residual: the concentration of chlorine remaining in the water after having been in contact with chlorine for a given amount of time.

Colony Counts: a scientific measure that identifies the number of bacteria, yeast, or mould colonies that are visible in test media.

Conservation Authority: local, watershed management agencies that deliver services and programs that protect and manage water and other natural resources in partnership with government, landowners and other organizations (*http://conservation-ontario.on.ca*).

Contaminant: any solid, liquid, gas, odour, heat, sound, vibration, radiation or combination of any of them resulting directly or indirectly from human activities that causes or may cause an adverse effect.

Corrective Action: steps that must be taken following an adverse water quality incident as specified by O.Reg. 170/03, Schedules 17 & 18, directed by the local medical officer of health or drinking water inspector, that are necessary to protect human health.

Cross-Connection: the physical connection of a safe or potable water supply with another water supply of unknown or contaminated quality or such that the potable water could be contaminated or polluted.

Cryptosporidium: a single-celled protozoan parasite found in the intestinal tract of many animals, where it sometimes causes disease.

D

Drinking-Water Quality Standards: standards set by Ontario Regulation 169/03 (Ontario Drinking-Water Quality Standards) for microbiological, chemical and radiological parameters which when present above certain concentration have known or suspected adverse health effects.

E

E.coli (Escherichia coli): a species of bacteria naturally present in the intestines of humans and animals. Most types of *E.coli* are harmless, but some active strains – especially O157:H7 – produce harmful toxins and can cause severe illness.

Exceedance: violation of a limit for a contaminant as prescribed in the Ontario Drinking-Water Standards regulation (O.Reg. 169/03).

G

Giardia: a protozoa parasite that can infect the intestines of vertebrates including humans and most domestic animals.

H

Heterotrophic Plate Count (HPC): HPC is a microbiological test that gives an indication of general bacterial population. HPC results are an indicator of deteriorating water quality and potential adverse human health effects.

L

Local Services Board: a community in areas of Northern Ontario without municipal structure. Local Service Boards are defined and governed by the *Northern Services Board Act* administered by the Ministry of Northern Development and Mines. The establishment of a Local Services Board may be initiated by a group of 10 or more residents who must be over the age of 18 and Canadian citizens. Drinking water systems run by Local Services Boards are categorized as non-municipal year-round residential under O.Reg. 170/03.

M

Microbiological Analysis: a term used to describe tests to determine the presence and identification of microorganisms in drinking water.

Microbiology: a branch of biology that deals with microorganisms and their effects on other living organisms.

Microorganism: an organism that cannot be seen without the aid of a microscope, including bacteria, protozoa, fungi, viruses and algae.

N

Nephelometric Turbidity Units: the unit used to describe turbidity. Nephelometric refers to the way the instrument, a nephelometer, measures how much light is scattered by suspended particles in the water. The greater the scattering, the

higher the turbidity. Therefore, low NTU values indicate high water clarity, while high NTU values indicate low water clarity.

P

Permit to Take Water (PTTW): any person that takes more than 50,000 litres of water per day from any source requires a permit from the Ministry of the Environment under the *Ontario Water Resources Act, 1990.*

Potable Water: water that, at a minimum, meets the requirements prescribed in Ontario Drinking-Water Quality Standards (O.Reg 169/03).

Protozoa: a very diverse group comprising some 50,000 organisms that consist of one cell. Most of them are able to move on their own. Some are a health concern in drinking water. See Giardia and Cryptosporidium.

Provincial Officer Order: an order issued by a Ministry of the Environment Provincial Officer to any person that contravenes any act governed by the Ministry of the Environment requiring action to correct the contravention.

R

Raw Water: surface or groundwater that is available as a source of drinking water but has not received any treatment.

S

Source Water Protection: actions taken to protect existing and future sources of municipal drinking water (quantity and quality), including groundwater, lakes, rivers, and streams. Source water protection involves developing and implementing a plan to manage current and future land use activities, land uses and their potential contaminants or impacts on water quality.

T

Total Coliform Bacteria: a group of waterborne bacteria consisting of 3 main groups with common characteristics. It is used as an indicator of water quality. The presence of total coliform bacteria in water leaving a treatment plant or in any treated water immediately after treatment could indicate inadequate treatment and possible water contamination.

Turbidity: a visible haze or cloudiness in water caused by the presence of suspended matter, resulting in the scattering and absorption of light – the cloudier the water, the greater the turbidity. Control of turbidity in drinking water systems is important for both health and aesthetic reasons. The substances and particles that cause turbidity can be responsible for significant interference with disinfection, can be a source of disease-causing organisms and can shield pathogenic organisms from the disinfection process.

W

Water Budget: a summation of inputs, outputs, and net changes to a particular water resource system over a fixed period.

Water Quality: a term used to describe the chemical, physical, and biological characteristics of water, usually in respect to its suitability for a particular purpose.

Waterborne Illness: a disease transmitted through the ingestion of contaminated water. Water acts as a passive carrier of infectious agents, and chemical or waterborne pathogens.

Watershed: a region or area bounded peripherally by a divide and draining ultimately to a particular watercourse or body of water.

Categories of Drinking Water Systems

Large Municipal Residential Drinking Water System: a municipal drinking water system that serves a major residential development and serves more than 100 private residences.

Small Municipal Residential Drinking Water System: a municipal drinking water system that serves a major residential development but serves fewer than 101 private residences.

Non-Municipal Year Round Residential Drinking Water System: a non-municipal drinking water system, other than a non-municipal seasonal residential system, that serves,

(a) a major residential development, or

(b) a trailer park or campground that has more than five service connections.

Large Municipal Non-Residential Drinking Water System: a municipal drinking water system that does not serve a major residential development and is capable of supplying drinking water at a rate of more than 2.9 litres per second.

Small Municipal Non-Residential Drinking Water System: a municipal drinking water system that does not serve a major residential development, is not capable of supplying drinking water at a rate of more than 2.9 litres per second and serves a designated facility or public facility.

Large Non-Municipal Non-Residential Drinking Water System: a non-municipal drinking water system that is capable of supplying drinking water at a rate of more than 2.9 litres per second and does not serve,

(a) a major residential development, or

(b) a trailer park or campground that has more than five service connections.

Small Non-Municipal Non-Residential Drinking Water System: a non-municipal drinking water system that is not capable of supplying drinking water at a rate of more than 2.9 litres per second, serves a designated facility or public facility and does not serve,

(a) a major residential development, or

(b) a trailer park or campground that has more than five service connections.

Non-Municipal Seasonal Residential Drinking Water System: a non-municipal drinking water system that,

(a) serves,

(i) a major residential development, or

(ii) a trailer park or campground that has more than five service connections, and

(b) does not operate to supply water to a development, trailer park or campground referred to in clause (a) for at least 60 consecutive days in,

(i) every calendar year, or

(ii) every period that begins on April 1 in one year and ends on March 31 in the following year.

Designated Facility:

(a) a children and youth care facility,

(a.1) a children's camp,

(b) a delivery agent care facility,

(c) a health care facility,

(d) a school or private school,

(e) a social care facility, or

(f) a university, a college of applied arts and technology, or an institution with authority to grant degrees.

Appendix 1: Summary of Drinking Water Convictions

MUNICIPAL RESIDENTIAL DRINKING WATER SYSTEM CONVICTIONS: SYSTEM OWNER APRIL 1, 2004 TO MARCH 31, 2005
The Corporation of the Town of Midland
The Town of East Gwillimbury
The Corporation of the Township of Woolwich
The Corporation of the Town of Grimsby
The Corporation of the Municipality of Highlands East (Cardiff/Bicroft)
The Corporation of the Separated Town of Gananoque
The Town of Northeastern Manitoulin and the Islands
The Corporation of the Township of North Dumfries
Ontario Clean Water Agency (Huron Park Water System)
The Corporation of the Township of Ignace
The Corporation of the Municipality of Grey Highlands
The Corporation of the Town of Fort Frances
The Corporation of the City of Timmins
The Corporation of the Town of Rainy River

LICENSED DRINKING WATER TESTING LABORATORY CONVICTIONS APRIL 1, 2004 TO MARCH 31, 2005

Name	Synopsis	Date Charges Sworn	Conviction Date	Fine
Accutest Laboratories Ltd.	Fail to immediately notify of a sample taken that showed adverse water quality	September 12, 2003	May 26, 2004	$20,000.00
E3 Laboratories Inc.	Fail to immediately report an adverse result from a drinking water test and fail to immediately report an adverse result from a drinking water test to a Medical Officer of Health	July 8, 2004	August 20, 2004	$5,000.00
Caduceon Enterprises Inc.	Fail to provide an immediate notice of an adverse water test, by failing to speak in person or by telephone with a person designated for that purpose by the owner of the drinking water system	July 28, 2004	March 10, 2005	$5,000.00

Appendix 2: Municipal Water Systems Receiving Orders

Summary of Municipal Residential Drinking Water Systems Receiving Orders and Local Services Board Receiving an Order (April 1, 2004 to March 31, 2005)

OWNER OF DRINKING WATER SYSTEM	DRINKING WATER SYSTEM NAME	MUNICIPAL LOCATION (IF DIFFERENT FROM OWNER)
Municipal Residential Drinking Water Systems		
Adjala-Tosorontio, The Corporation of the Township of	Colgan Well Supply	
Amaranth, The Corporation of the Township of	Waldemar Heights (Grand River Estates) Well Supply	
Assiginack, The Corporation of the Township of	Assiginack Water Treatment Plant	
Atikokan, The Corporation of the Township of	Atikokan Water Treatment Plant	
Barrie, Corporation of the City of	Barrie Well Supply	
Billings, Corporation of the Township of	Kagawong Water Treatment Plant	
Bradford West Gwillimbury, The Corporation of the Town of	Bradford/Bond Head Well Supply	
Brant, The Corporation of the County of	Airport Well Supply	
	Cainsville Distribution System	
	Mount Pleasant (Maple Ave) Well Supply	
	Paris Well Supply	
	St. George Well Supply	
Burk's Falls, The Corporation of the Village of	Burk's Falls Well Supply	
Chapple, The Corporation of the Township of	Barwick Well Supply	
Cobalt, The Corporation of the Town of	Cobalt Water Treatment Plant	
Dubreuilville, The Corporation of the Township of	Dubreuilville Well Supply	
East Garafraxa, The Corporation of the Township of	Marsville Subdivision Well Supply	

OWNER OF DRINKING WATER SYSTEM	DRINKING WATER SYSTEM NAME	MUNICIPAL LOCATION (IF DIFFERENT FROM OWNER)
East Gwillimbury, The Corporation of the Town of	Mount Albert Distribution System	
	Queensville Distribution System	
Essa, The Corporation of the Township of	Glen Ave (Thornton) Well Supply	
Falconbridge Limited	Falconbridge Well Supply	Greater Sudbury, The City of
Galway-Cavendish-Harvey, The Corporation of the Township of	Buckhorn Lake Estates Well Supply	
Greater Sudbury, City of	Dowling Well Supply	
Greenstone, The Corporation of the Municipality of	Longlac Water Treatment Plant	
Haldimand, The Corporation of the County of	Nanticoke And Trunk Main Water Treatment Plant	
Hanover, The Corporation of the Town of	Hanover Water Treatment Plant	
Hilton Beach, The Corporation of the Village of	Hilton Beach Well Supply	
Huron-Kinloss, The Corporation of the Township of	Lakeshore Well Supply	
Ignace, The Corporation of the Township of	Ignace Well Supply	
Inco Ontario Division Limited	Vermillion (Inco) Water Treatment Plant	Greater Sudbury, The City of
Innisfil, The Corporation of the Town of	Goldcrest Well Supply	
Joint Board of Management	Port Burwell Secondary Distribution System	Malahide, The Corporation of the Township of
Kapuskasing, The Corporation of the Town of	Kapuskasing Well Supply	
Kawartha Lakes, The Corporation of the City of	Lindsay Water Treatment Plant	
	Norland Water Treatment Plant	
	Western Trent/Palmina Well Supply	
Kenora, The Corporation of the City of	Kenora Area Water Treatment Plant	
Killarney, The Corporation of the Municipality of	Killarney Water Treatment Plant	
Kitchener, The Corporation of the City of	Kitchener Distribution System	
Latchford, The Corporation of the Town of	Latchford Water Treatment Plant	
Manitouwadge, The Corporation of the Township of	Manitouwadge Well Supply	
Michipicoten, The Corporation of the Township of	Michipicoten River Village Well Supply	
	Wawa Water Treatment Plant	

OWNER OF DRINKING WATER SYSTEM	DRINKING WATER SYSTEM NAME	MUNICIPAL LOCATION (IF DIFFERENT FROM OWNER)
Minto, The Corporation of the Town of	Minto Pines Subdivision Well Supply	
Moonbeam, The Corporation of the Township of	Moonbeam Well Supply	
Municipality of Callander	Callander Water Treatment Plant	
New Tecumseth, The Corporation of the Town of	Alliston Water Supply System	
	Tottenham Well Supply	
North Dumfries, The Corporation of the Township	Branchton Distribution System	
	Lloyd Brown Distribution System	
	Roseville Distribution System	
Northeastern Manitoulin and the Islands	Little Current Water Treatment Plant	
Oro-Medonte, Township of	Canterbury Subdivision Well Supply	
	Harbourwood Well Supply	
	Maplewood Estates Well Supply	
	Shanty Bay Well Supply	
Powassan, The Corporation of the Municipality of	Powassan Well Supply	
Prince Edward, The Corporation of the County of	Peats Point Subdivision Well Supply	
Ramara, The Corporation of the Township of	Somerset/Knob Hill Water Distribution System	
Sables-Spanish Rivers, The Corporation of the Township of	Massey Water Treatment Plant	
South River, The Corporation of the Village of	South River Water Treatment Plant	
Springwater, The Corporation of the Township of	Del Trend Subdivision Well Supply	
	Elmvale Well Supply	
	Snow Valley Subdivision Well Supply	
Tay, The Corporation of the Township of	Midland Bay Woods Water Treatment Plant	
	Rope Subdivision Water Treatment Plant	
	Waubaushene Water Treatment Plant	
Tehkummah, The Corporation of the Township of	South Baymouth Water Treatment Plant	
Temagami, The Corporation of the Municipality of	Temagami North Water Treatment Plant	

OWNER OF DRINKING WATER SYSTEM	DRINKING WATER SYSTEM NAME	MUNICIPAL LOCATION (IF DIFFERENT FROM OWNER)
Temiskaming Shores, The City of	Dymond Well Supply	
	Haileybury (Lake Temiskaming) Water Treatment Plant	
	New Liskeard Well Supply	
Tiny, The Corporation of the Township of	Georgian Sands Well Supply	
Waterloo, The Regional Municipality of	Mannheim Water Supply System	Kitchener, The Corporation of the City of
	Maryhill Well Supply	Woolwich, The Corporation of the Township of
	West Montrose Well Supply	Woolwich, The Corporation of the Township of
West Nipissing, The Corporation of the Municipality of	Verner Water Treatment Plant	
Local Services Board		
Armstrong Local Services Board	Armstrong Well Supply	

Ontario

For More Information

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